AD-A047 379 INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA COST ANAL--ETC F/G 15/5
A SYSTEM TO PRODUCE A LOGISTIC RESOURCE ANNEX TO THE NAVY FIVE --ETC(U)
SEP 76 J D MORGAN, N B DAVIS, A B FULLER DAHC15-73-C-0200

UNCLASSIFIED S-484 IDA/HQ-77-18707 NL

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IDA STUDY S-484

A SYSTEM TO PRODUCE A LOGISTIC RESOURCE ANNEX TO THE NAVY FIVE YEAR DEFENSE PROGRAM

John D Morgan, *Project Leader*
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September 1976

Prepared for

Office of Assistant Secretary of Defense
(Program Analysis and Evaluation)

INSTITUTE FOR DEFENSE ANALYSES
COST ANALYSIS GROUP

IDA Log No. HQ 77-18707

The work reported in this document was conducted under contract DAHC15 73 C 0200 for the Department of Defense. The publication of this IDA Study does not indicate endorsement by the Department of Defense, nor should the contents be construed as reflecting the official position of that agency.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

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1. REPORT NUMBER: S-484
2. GOVT ACCESSION NO.:
3. RECIPIENT'S CATALOG NUMBER:
4. TITLE (and Subtitle): A System to Produce a Logistic Resource Annex to the Navy Five Year Defense Program
5. TYPE OF REPORT & PERIOD COVERED: Final
6. PERFORMING ORG. REPORT NUMBER: S-484
7. AUTHOR(s): John D. Morgan, Norman B. Davis, Aaron B. Fuller, Francis L. McDonald
8. CONTRACT OR GRANT NUMBER(s): DAHC15-73-C-0200
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Institute for Defense Analyses, Cost Analysis Group, 400 Army-Navy Drive, Arlington, Va. 22202
10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: PA&E-94
11. CONTROLLING OFFICE NAME AND ADDRESS: Logistics Division, OASD/I&L, Washington, D.C. 20301
12. REPORT DATE: September 1976
13. NUMBER OF PAGES: 234
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): 256 p.
15. SECURITY CLASS (of this report): Unclassified
15a. DECLASSIFICATION DOWNGRADING SCHEDULE: N/A
16. DISTRIBUTION STATEMENT (of this Report): Approved for public release; distribution unlimited.
IDA/HQ; SBIE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report):
77-18707, AD-E500,008
18. SUPPLEMENTARY NOTES:
19. KEY WORDS (Continue on reverse side if necessary and identify by block number): Logistics; Planning, Programming and Budgeting Systems (PPBS); Five Year Defense Program (FYDP); Logistic Support, Navy Security Assistance Program; Department of the Navy Five Year Program (DNFYP); Supply and Maintenance; Defense Resource Allocation; Logistic Functions;
20. ABSTRACT (Continue on reverse side if necessary and identify by block number):

This study is the final report of IDA research to develop an improved Department of the Navy Five Year Program (DNFYP) resource data base structure to provide more meaningful displays of resources allocated to logistic support. IDA Paper P-1194, March 1976, described IDA's initial approach to addressing this requirement, discussed a proposed Navy ideal logistic support data base structure and presented sample formats for display of logistic support resources. After receiving

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

DDC RECEIVED DEC 9 1977 B

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19. (continued)

Logistic Data Systems; Maintenance Costs; Logistic Management Information Systems; Logistic Resource Consumption; Logistic Support Processes; Appropriations; Navy Cost Information System; Navy Resources Model; Logistic Information Elements.

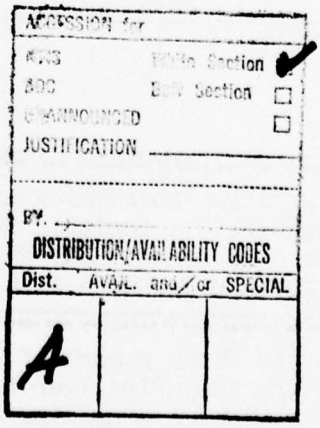
20. (continued)

guidance from OASD/I&L on key issues discussed in P-1194, IDA completed S-484 to satisfy the OSD Task Order PA&E-94 requirements for this study.

This study describes the final completed framework for the DNFYP logistic resource annex (LRA) and provides a detailed review of the logistic information elements included in the nine identified logistic functions. It discusses the capabilities of Navy data systems to provide the LRA information elements. The study then presents the complete, integrated set of formats selected by IDA as most meaningful for displaying Navy logistic support resources. These formats are designed to facilitate DoD and Department of the Navy planning, programming and analyses.

Several issues, primarily administrative, must be resolved before the Navy can fulfill requirements to produce an LRA. These issues are discussed in the study since they are critical to the successful implementation of the proposed system.

Finally, the study presents recommendations for long range improvements so the basic LRA concept can be expanded to provide improved visibility and management of DoD logistic support resources.



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Contract DAHC15 73 C 0200
Task PA&E 94

FOREWORD

This study was prepared by the Cost Analysis Group of the Institute for Defense Analyses to report on work accomplished under the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation Task Order PA&E-94, 4 August 1975. The objective of this task order was to develop an improved Department of the Navy Five Year Program (DNFYP) resource data base structure to provide more meaningful displays of resources allocated to logistic support.

IDA Paper P-1194, *A Phase I Report On A Proposed Navy FYDP Logistic Resource Data Base Structure and Associated Resource Displays*, March 1976, describes IDA's conceptual approach to fulfilling the task order requirements. Based on IDA Paper P-1194, OASD/I&L provided guidance on several key issues that permitted IDA to complete the entire study effort in two separate documents; this document (IDA Study S-484), and IDA Paper P-1248, which presents a structure and formats within which the Navy can display estimates of future Security Assistance Programs and the logistic resources required to support them. Although S-484 and P-1248 are complete documents satisfying all elements of the task order, considerable information is available in IDA Paper P-1192 that is not presented here or in P-1248 and would be of interest to the professional logistician or logistic program or budget analyst.

In Chapter I, IDA describes the guidance received from OASD/I&L in response to IDA's request for guidance in IDA Paper P-1194 concerning the proposed Navy logistic data base structure

and other features of the IDA concept for completing the task order requirements.

Chapter II presents a detailed description of the final IDA-developed logistic data base structure required to support the DNFYP Logistic Resource Annex (LRA) and the extent to which existing and planned Navy data systems are capable of supporting the LRA data base. Chapter II also contains a comparison of the IDA LRA data base structure with the data base structures being considered in the current Logistics Management Institute Operating and Support Cost Guide studies relating to aircraft and ships.

Chapter III presents a detailed description of the set of formats recommended by IDA to comprise the initial LRA. These formats provide a complete, integrated set of data selected by IDA as most meaningful for analysis of the Navy's allocation of logistic support resources.

Chapter IV addresses several issues that must be resolved before levying the initial requirement for the LRA. Most of the issues are administrative but represent potential barriers to successful implementation if they are not addressed prior to the publication of detailed LRA guidance.

Chapter V provides recommendations for long-range improvements to the proposed LRA. IDA believes these should be addressed if OSD wishes to expand the LRA concept as a means of providing improved visibility and management of DoD logistic support resources.

Members of the IDA Study Team extend their appreciation to the many professional people in the Navy and OSD who, through their cooperation and assistance, enabled IDA to conduct this study. We appreciate the constructive comments and recommendations provided by all from whom we sought advice and assistance, especially Commander R.R. Sareeram (NOP-090) who served as our official Navy point of contact.

Periodic reviews and critiques of our work were performed by a Technical Review Board composed of Mr. Robert A. Freeman (NOP-901M), General Planning and Programming Division (NOP-90), Navy Program Planning Office (NOP-090); Mr. David Novick, President of David Novick Associates, Consultants in Economics; and Dr. Harry Williams, Director of Program Analysis Division, IDA.

SUMMARY

This research task was undertaken for the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation under Task Order PA&E-94, August 4, 1975.[1] The objective of this task was to develop an improved Department of the Navy Five Year Program (DNFYP) logistic resource data base structure capable of providing more meaningful displays of Navy logistic support resources than are possible with existing structures. Currently, these resources (dollars and manpower) are often included in highly aggregated totals in various program elements in the DoD Five Year Defense Program (FYDP) and the DNFYP. Research under this task included development of a proposed FYDP and DNFYP Logistic Resource Annex to be published as a separate document augmenting existing Planning, Programming, Budgeting System (PPBS) supporting publications.

The complete task was accomplished in two phases. Research accomplished in Phase I was designed to give OSD the information needed to make essential decisions regarding the form and content of the final product of the study. The results of the Phase I effort are documented in IDA Paper P-1194.[2] P-1194 describes IDA's conceptual approach to developing an LRA; presents a proposed ideal logistic resource data base structure;

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[1] On March 5, 1976, the OASD/PA&E office responsible for project monitorship of this study was transferred to OASD/I&L. PA&E-94 task monitorship remained with the transferred office so monitorship of the study became an OASD/I&L responsibility.

[2] John D. Morgan, *et al., A Phase I Report On A Proposed Navy FYDP Logistic Resource Data Base Structure and Associated Resource Displays*, Paper P-1194, Institute for Defense Analyses, Arlington, VA., March 1976.

discusses in depth the current and planned Navy data systems that can be used to provide all of the information elements required to support the entire data base structure; and includes sample formats that can be used to display logistic resources. P-1194 also describes the institutional framework for Navy logistic support of the DoD Security Assistance Program as a first step in developing a proposed data base structure and associated displays to provide improved visibility of the Navy resources consumed in this program.

This Study presents the final results of our research on this task for all elements of the task order except those concerning the future Security Assistance Program estimate structure which are presented in IDA Paper P-1248. Specifically, this Study:

- Describes and documents a comprehensive data base structure that relates Navy total logistic resources (dollars and manpower) to the logistic functions and sub-functions performed and, in some cases, to equipment and weapon systems supported.
- Presents a proposed set of formats to comprise the initial DNFYP Logistic Resource Annex. This set of formats permits a complete, integrated display of data suitable for use by OSD and the Navy in analyzing the allocation of Navy resources to the logistic support of approved programs covered by the DNFYP and DoD FYDP.
- Identifies and discusses several issues that must be resolved before a requirement can be levied on the Navy to produce the LRA. These issues are administrative in nature and do not affect the IDA LRA concept. They are potential barriers, however, to the successful implementation of this new system for improved visibility of the Navy's allocation of its total logistic resources.
- Identifies several long-range improvements to the IDA-proposed initial LRA which should improve the usefulness of the document as a management tool to support the PPBS process. These improvements represent logical extensions of the basic LRA concept.

A. BACKGROUND INFORMATION

An extensive discussion of the major guidance provided by OSD at the beginning of this task is presented in the Phase I Paper. Chapter I of this Study describes subsequent guidance provided by OSD as the result of their analysis of the Phase I IDA Paper P-1194. This guidance relates primarily to changes in the data base structure.

B. THE LRA DATA BASE

Chapter II and Appendix A present a detailed description of the IDA-developed logistic data base structure required to support the LRA. This structure can be visualized as a multi-dimensional matrix that relates logistic resources (dollars and manpower) to logistic functions and sub-functions performed and, in some cases, to equipment and weapon systems supported.

The rows of the matrix categorize logistic resources by nine basic functions. Within each of these basic functional categories, from one to six levels of aggregation are used to identify sub-functional detail. Table S-1 shows the nine basic logistic functions and the first level of detail (major sub-functions) within each function. The functions and sub-functions that comprise this classification are essentially the same as those presented in IDA Paper P-1194, adjusted to reflect subsequent OASD/I&L direction. Thus, the final data base structure includes the logistic functions and resources specified by OASD/I&L to be included in the initial LRA.

The columns of the data base matrix identify logistic resources by fiscal years, types of resources, equipment supported, and other meaningful categories required to provide improved visibility of resources allocated to accomplish logistic functions. Data at the intersection of matrix rows and columns represent logistic information elements that identify the magnitude of the resources allocated to perform each logistic

Table S-1. THE FINAL IDA LOGISTIC DATA BASE STRUCTURE (SUMMARY)

A. LOGISTIC RELATED RESEARCH AND DEVELOPMENT

1. Reliability and Maintainability of Equipment
2. Operational Resupply Techniques
3. Pollution Abatement
4. Energy Conservation
5. All Other Logistic Related Projects

B. MAINTENANCE

1. Organization Level
2. Intermediate Level
3. Depot Level
4. Investment in Maintenance Related Facilities and Equipment - Value

C. MATERIAL SUPPORT

1. Investment in Logistic Support Hardware - Value
2. Investment in Modification/Alteration/Conversion Kits - Value
3. Investment in Material Support Facilities and Equipment - Value
4. Supply Activities
5. Central Inventory Control Point Operations
6. Central Procurement Operations
7. Petroleum, Oil and Lubricants (POL) - Value
8. Stock-Funded Material (NON-ADD) - Value

D. TRANSPORTATION

1. Investment in Transportation Related Facilities and Equipment - Value
2. Second Destination Transportation - Value
3. Base Transportation

E. ENGINEERING SUPPORT (INCLUDES TECHNICAL ASSISTANCE)

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

F. INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

G. LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION

1. NAVMAT
2. NAVAIR
3. NAVSEA
4. NAVELEX
5. NAVFAC
6. NAVSUP
7. SSPO

H. MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES

1. Naval Petroleum Reserves
2. Industrial Preparedness
3. Printing Plants and Laundries
4. Central Logistic Training Activities
5. All Other Activities

I. INSTALLATION SUPPORT

1. Investment in Installation Support Facilities and Equipment - Value
2. Command and Administration
3. Real Property Maintenance Activities
4. Base Services
5. Base Communications
6. Support of R&D Appropriation Financed Activities

function and sub-function. These information elements are mutually exclusive and thus may be extracted, aggregated, and displayed in formats published in a DNFYP LRA. To achieve this unique feature, all information elements have been defined so each item of information fits into only one location in the matrix. In some cases, these definitions may appear to be arbitrary but unless data are incorporated into the data base structure in a consistent manner, the utility of the LRA will be degraded.

The data base structure identifies separately dollars and manpower allocated to the support of Navy and non-Navy programs. In general, Navy programs are defined as all programs funded by Navy and Reserve Navy appropriations. Non-Navy programs are those programs supported by manpower authorizations allotted to the Navy but funded by sources other than Navy appropriations. This category includes Navy support of other Military Services (Army, Air Force, and Marine Corps), Family Housing and Security Assistance.

Logistic support resources will be identified by weapon system only if there is a logical basis for such identification. Resources will not be prorated to weapon systems merely to allocate all Navy logistic resources to a major mission such as that represented by a weapon system. Two types of resources will be identified to weapon systems: resources that can be *explicitly shown* in terms of a particular weapon system such as weapon system peculiar initial spares; and resources that can be *logically related* to weapon systems by a suitable proration technique. For example, it is possible to allocate common spare parts to individual weapon systems based on existing accounting or programming procedures.

Based on OASD/I&L direction, the logistic support resources identified in terms of weapon systems for each fiscal year are:

- Aircraft, ship and missile material categories of the Organization, Intermediate and Depot Maintenance sub-functions of the Maintenance function.
- Initial and replenishment spares and support equipment and data of the Investment in Logistic Support Hardware-Value sub-function of the Material Support function.
- Aircraft, missile and torpedo modification kits, ship and ordnance alteration kits and ship conversion kits of the Investment in Modification/Alteration/Conversion Kits-Value sub-function of the Material Support function.
- Organization and Intermediate Supply Activities sub-functions of the Material Support function.

Chapter II also discusses the extent to which existing and planned Navy data systems are capable of supporting the proposed LRA data base. Security Assistance data systems are included in the discussion. The data base structure maximizes existing and planned Navy data systems and the procedures currently used by the Navy to program logistic resources. We concluded that the FYDP Subsystem of the Navy Cost Information System (NCIS/FYDP) (which is the primary system used by the Navy to produce the DNFYP and update the DoD FYDP) is capable of supporting the LRA if some minor modifications are made to it.[1] In addition, the Navy Resources Model (NARM), depending on the level of detail desired, can be used either as a suitable alternative or as a complement to the NCIS/FYDP system. With the exception of depot maintenance, data systems currently exist that permit the Navy to develop the information elements required by the IDA LRA data base. We also concluded that once the Navy implements the depot level data system required by DODI 4151.15, the Navy would be capable of generating all of the depot maintenance information elements required by the LRA structure.

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[1]It would be necessary to utilize Security Assistance data systems to supplement the NCIS/FYDP for some data.

Chapter II also includes a comparison of the IDA LRA data base structure and the data base structures being considered in the current Logistics Management Institute Operating and Support Cost Guide studies relating to aircraft and ships. It was concluded that despite differences in the basic concepts and objectives of these three systems, the LRA data base structure is generally consistent with the LMI-developed systems. One difference relates to total resource coverage. The LMI O&S element structures are oriented toward the total life cycle costs of individual weapon systems including acquisition, operating, and logistic support costs. The LRA data structure addresses only Navy logistic support resources, including weapon system as well as non-weapon system related costs, but excludes most acquisition costs and operating costs that are not specifically logistic related (e.g., aircrew costs). In addition, the LRA data base structure contains considerably more detailed logistic information than the two LMI structures, so the LRA structure can be easily aligned with the LMI structures at the desired levels of aggregation for logistic support costs.

C. THE LRA

Chapter III presents a detailed description and discussion of the set of formats recommended by IDA to comprise the initial LRA. These formats provide a complete, integrated set of data selected by IDA as most meaningful for analysis of the Navy's allocation of logistic support resources. The LRA, similar in concept to the FYDP Procurement Annex, displays selected information elements from the IDA logistic data base structure to provide improved visibility of the Navy's logistic support of FYDP programs. The LRA augments current FYDP publications. Since it does not contain a narrative section, the LRA does not replace current Logistic Annexes and back-up data submitted by the Navy at various times during the PPBS cycle.

The formats that comprise the initial LRA emphasize products of recurring general interest. Both summary-level and detailed displays are provided for this purpose; formats that at this time do not appear to warrant routine submission are excluded. Thus, LRA users will be able to identify and monitor resource allocations and trends in areas of general interest. Detailed data are provided in the LRA data base to permit rapid extraction of pertinent lower level information for focusing on specific problems that may be of interest on a one-time basis.

The LRA formats are divided into four groups to highlight different aspects of the overall allocation of logistic resources. Figure S-1 summarizes the data provided by each group. In addition, each format is identified by a comprehensive title to facilitate rapid location of specific subject areas and levels of detail. The complete set of formats is presented in Appendix C, which illustrates the LRA as it would be published. The List of Figures in Appendix C lists all formats in the proposed LRA.

The first group of formats is comprised of summary-level displays. Detailed dollar and manpower formats to support these summary displays are included in Groups D and M, respectively. Group W is comprised of formats that relate logistic resources for selected functions and sub-functions to the material and weapon system categories supported.

In Group W, formats are not provided to show resources in terms of specific weapon systems although an illustrative format (for this purpose) is included in the series of aircraft weapon systems formats. The general question of the routine display of resources by individual weapon systems is addressed in detail in Appendix D. The discussion concludes that prior to implementing the LRA, a joint OSD and Navy working group should be established to review each Navy weapon system. The group should determine the specific weapon systems and groups

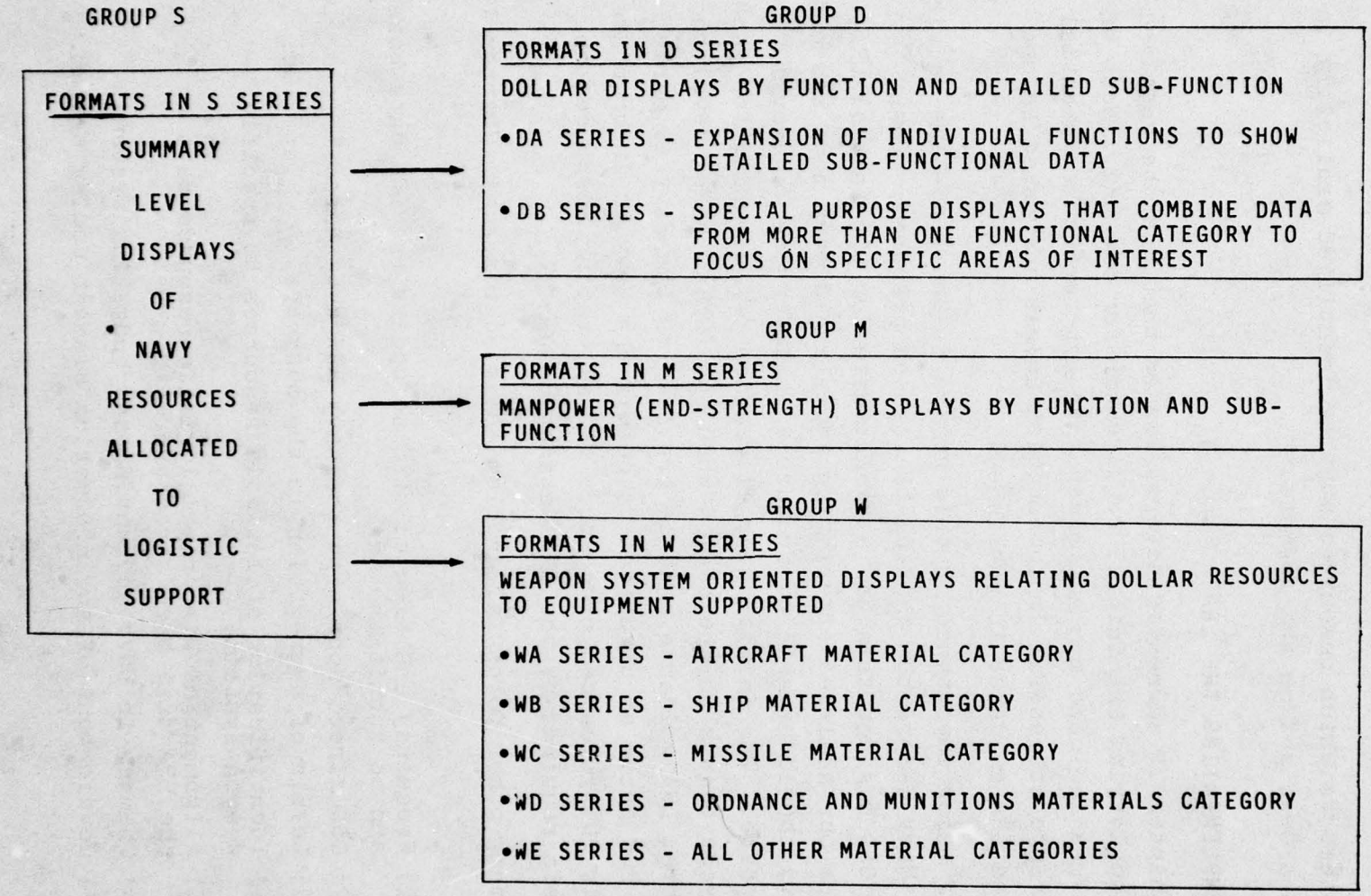

Figure S-1. FORMATS BY GROUP AND DATA DISPLAYED

of systems to which resources must be identified explicitly in the data base and on the formats.

D. IMPLEMENTING THE LRA

Chapter IV addresses several issues that must be resolved prior to levying the initial requirement for the LRA. Most of the issues included are administrative but represent potential barriers to successful implementation unless addressed before detailed LRA guidance is published.

Of major importance in this regard is the lead-time required by the Navy before the initial LRA can be prepared. Even though OSD has not selected a target date for the initial LRA, based on our analyses of existing and planned Navy data systems the Navy should be able to produce an LRA for the January 1978 FYDP update. The initial Navy allocation of resources for each PPBS cycle occurs in the period when the POM is being developed. Therefore, LRA guidance must be provided to the Navy as early in the POM cycle as practical to permit the Navy to incorporate, in their POM guidance, procedures for allocating resources on the basis required by the LRA data structure.

Among other potential problem areas addressed in Chapter IV are:

(1) Frequency and time allowed to update the LRA data base and to submit the LRA.

(2) OSD direct access to the Navy LRA data base.

(3) Levels of aggregation in the outyears.

(4) Identification of logistic resources to specific weapon systems.

(5) Alignment of historical logistic resource data to the LRA data base structure.

(6) Changes in Navy accounting and budgeting systems.

(7) Development of an information element coding system.

E. LONG-RANGE IMPROVEMENTS TO THE LRA

The proposed LRA represents a significant addition to the DoD PPBS. [illegible] Navy's current methodology and procedures for allocating resources, a successfully implemented LRA can provide improved OSD visibility of Navy resource allocations. With this improved visibility as a basis, extensions of the LRA can improve the process of Navy logistic allocation and the efficiency and effectiveness of logistic support programs. These extensions can include:

(1) Expansion of the LRA data base to include program data to substantiate the Navy's allocation of logistic resources.

(2) Changes in the FYDP Program Element structure.

(3) Expansion of the LRA to relate logistic resource allocation to specific program decisions, force adjustments, and designated issues.

(4) Use of sampling techniques.

(5) Revised Congressional Budget Exhibits consistent with LRA formats.

F. CONCLUSION

This study, in conjunction with IDA Paper P-1194, presents and describes a complete management information system to develop and produce a Logistic Resource Annex for the FYDP and DNFYP. The proposed logistic resource data base structure contains the data required by OSD to achieve improved visibility of the Navy's allocation of resources to logistic support. Current or planned Navy data systems, with minor modifications, are capable of providing all of the information elements required to support the entire structure. The set of formats selected to support the initial LRA provides a complete, integrated set of information from the data base structure to permit meaningful analyses of Navy logistic support resources.

IDA worked closely with key members of the OSD and Navy staffs to assure that the IDA system provides the data and improved visibility needed to facilitate planning, programming, and analysis of Navy resources allocated to logistic support. Nevertheless, we consider the LRA a "first generation" of the ultimate system required by OSD to improve the effectiveness and efficiency of DoD's resource allocation process. The IDA-proposed LRA provides a firm foundation upon which to build the ultimate system. Once improved visibility is achieved in current allocations of resources, improvements in the procedures used to make these allocations can be designed and incorporated.

CONTENTS

APPENDIXES

FIGURES

TABLES

GLOSSARY OF ABBREVIATIONS

AEI	Associated End-Item
ALT	Alteration (Ship)
APN	Aircraft Procurement, Navy
ASW	Anti-Submarine Warfare
AUTEC	Atlantic Undersea Test/Evaluation Center
BCC	Budget Classification Code
CNET	Chief of Naval Education and Training
CONUS	Continental United States
DCNO	Deputy Chief of Naval Operations
DDP&E	Director of Defense Planning and Evaluation
DNFYP	Department of the Navy Five Year Program
DoD	Department of Defense
DODI	Department of Defense Instruction
DON	Department of the Navy
DPPC	Defense Planning and Programming Category
DSAA	Defense Security Assistance Agency
FBMS	Fleet Ballistic Missile System
FHD	Family Housing, Defense
FMP	Fleet Modernization Program
FMS	Foreign Military Sales
FMT	Foreign Military Training
FSN	Federal Stock Number
FY	Fiscal Year
FYDP	Five Year Defense Program
GSA	General Services Administration
ICP	Inventory Control Point
IE	Information Element
IMA	Intermediate Maintenance Activity

LANTREP	Atlantic Fleet Representative
LMI	Logistics Management Institute
LRA	Logistic Resource Annex
MAAG	Military Assistance Advisory Group
MAC	Military Airlift Command
MAP	Military Assistance Program
MASL	Military Articles and Services List
MCON	Military Construction, Navy
MCONR	Military Construction, Navy Reserve
MISIL	Management Information System, International Logistics
MOD	Modification
MPN	Military Personnel, Navy
MSC	Military Sealift Command
NAFI	Naval Avionics Facility, Indianapolis
NARF	Naval Air Rework Facility
NARL	Naval Arctic Research Lab
NARM	Navy Resources Model
NAVAIR	Naval Air Systems Command, NAVMAT
NAVELEX	Naval Electronic Systems Command, NAVMAT
NAVFAC	Naval Facilities Engineering Command, NAVMAT
NAVILCO	Navy International Logistics Control Office
NAVMAT	Naval Material Command
NAVSEA	Naval Sea Systems Command, NAVMAT
NAVSUP	Naval Supply Systems Command, NAVMAT
NCIS	Navy Cost Information System
NCIS/FYDP	NCIS/FYDP Subsystem
NCIS/OPS	NCIS/Operations Subsystem
NIF	Navy Industrial Fund
NMCSA	Navy Material Command Support Activity
NPR	Naval Petroleum Reserve
NSF	Navy Stock Fund
OASD/I&L	Office of the Assistant Secretary of Defense/ Installations and Logistics

OASD/PA&E	Office of the Assistant Secretary of Defense/ Program Analysis and Evaluation
O&MN	Operations and Maintenance, Navy
O&MNR	Operations and Maintenance, Navy Reserve
O&S	Operating and Support
OP-090	Navy Program Planning Office
OP-63	Security Assistance Division
OP-90	Navy General Planning and Programming Division
OPN	Other Procurement, Navy
OPTAR	Operating Target
OSD	Office, Secretary of Defense
PACREP	Pacific Fleet Representative
PCS	Permanent Change of Station
PE	Program Element
POL	Petroleum, Oil and Lubricants
POM	Program Objective Memorandum
PPB	Planning, Programming and Budgeting
PPBS	Planning, Programming and Budgeting System
RA/TA	Restricted Availability/Technical Availability
R&D	Research and Development
RDT&E	Research, Development, Test and Evaluation
RDT&EN	Research, Development, Test and Evaluation, Navy
RFC	Required Functional Capabilities
ROH	Routine Overhaul
ROV	Repair of Other Vessels
RPN	Reserve Personnel, Navy
SCN	Shipbuilding and Conversion, Navy
SHOROC	Shore Required Operational Capability
SHORSTAMPS	Shore Requirements, Standards, and Manpower Planning System
SIDS	Standards Implementation Document System
SMD	Ship Manpower Document
SQMD	Squadron Manpower Document
SRF	Ship Repair Facilities

SSPO	Strategic Systems Project Office, NAVMAT
SUPSHIP	Supervisor of Shipbuilding, Conversion and Repairs
SYSCOM	Systems Commands, NAVMAT
T/M	Type and Model
T/M/S	Type, Model and Series
TOA	Total Obligational Authority
UIC	Unit Identification Code
VAMOSC	Visibility and Management of Support Costs
WBS	Work Breakdown Structure
WPC	Work Performance Category
WPN	Weapons Procurement, Navy
3M	Maintenance and Material Management Information System

Chapter I

INTRODUCTION

This Study presents the final results of Institute for Defense Analyses (IDA) work to develop an improved Department of the Navy Five Year Program (DNFYP) logistic resource data base structure. The information elements in this structure permit the preparation of more meaningful displays of resources allocated to logistic support than the displays that can be produced from existing data bases. This research also includes the design of formats to be included in a Logistic Resource Annex (LRA) to the DNFYP. This work was undertaken for the Office of the Assistant Secretary of Defense for Program Analysis and Evaluation under Task Order PA&E-94, August 4, 1975.[1]

IDA Paper P-1194, *A Phase I Report on A Proposed Navy FYDP Logistic Resource Data Base Structure and Associated Resource Displays*, March 1976, presents the results of IDA's initial research on this problem. P-1194 describes IDA's conceptual approach to addressing the study requirement, presents a proposed Navy ideal logistic data base structure, and shows sample formats that display logistic resources historically consumed and planned for future consumption. The Paper discusses in depth the Navy data systems that can provide information to the proposed structure and describes the institutional framework for Navy logistic support to the Department of Defense Security Assistance Program.

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[1]On March 5, 1976, the OASD/PA&E office responsible for project monitorship of this study was transferred to OASD/I&L. PA&E-94 task monitorship remained with the transferred office so future monitorship of the study became an OASD/I&L responsibility.

In P-1194, IDA presented a plan for completion of all work required by Task Order PA&E-94. IDA also requested approval or additional guidance from the Office of the Assistant Secretary of Defense for Installations and Logistics (OASD/I&L) on the proposed Navy logistic data base structure and other features of the IDA concept for accomplishing the PA&E-94 requirements. This final Study, S-484, has been prepared based upon our initial research and the further guidance received from OASD/I&L.

P-1194 is comprehensive in its treatment of the topics mentioned above. The guidance received from OASD/I&L based on P-1194 relates primarily to the structure of the proposed Navy logistic data base, which supports an LRA to the DNFYP described in Chapter III of that paper. The guidance also provides decisions on certain issues IDA considers essential to successful completion of the study. To avoid unnecessary duplication, this Study assumes that the reader is familiar with the contents of P-1194. The work performed after submittal of P-1194 is referred to as Phase II in some parts of this Study.

A. APPROACH AND SCOPE OF PHASE II RESEARCH

In the Phase I research reported in P-1194, IDA develops an ideal logistic data base structure that includes all the logistic resource information elements required by the OSD staff to support the DoD PPBS process. We also present thirteen sample formats which show how these data can be displayed.

Based on the guidance received from OASD/I&L in a memorandum of June 9, 1976, we revised the data base structure to reflect the form, structure, and content of data desired by OSD.[1] We also revised some of the sample formats to make them consistent with the type of data to be included in the final

[1]Memorandum to Dr. John D. Morgan from Mr. Charles Groover, Director, Logistics Program/Budget Division, OASD/I&L.

logistic data structure and developed additional formats to constitute a complete LRA.

With regard to the Navy Security Assistance Program, P-1194 includes a description of the Navy institutional framework for support of that program. It was necessary in the Phase II work, therefore, to develop a comprehensive description of Navy data systems that produce Security Assistance Program logistic support information. The Security Assistance Program data included in the logistic data base structure are also defined.

Finally, in our Phase II research we developed suggestions and recommendations regarding implementation of the DNFYP Logistic Resource Annex requirement. We also developed ideas on possible long range improvements in the total process of achieving meaningful visibility at the OSD level of planned logistic resource expenditures.

Having accomplished our work consistent with this approach, we prepared this Study to satisfy Task Order PA&E-94 requirements.

B. THE FINAL NAVY LOGISTIC RESOURCE ANNEX DATA BASE STRUCTURE

The OASD/I&L Memo of June 9, 1976, provides the following guidance with regard to the data base structure:

> (1) OSD is primarily interested in identifying resources by weapon system supported and function performed. Therefore, it would be more appropriate to provide an initial distribution of logistic resources by logistic function or sub-function than by cost category.[1] OSD wants to see resources used in overall mission areas, but since the structure includes information by weapon system, combinations of data could be prepared to show total resources by

[1]John D. Morgan, et al., *A Phase I Report On A Proposed Navy FYDP Logistic Resource Data Base Structure and Associated Resource Displays*, Paper P-1194, Institute for Defense Analyses, Arlington, Virginia, March 1976, pp. 51-96. The ideal logistic data base structure developed in our Phase I research contains three major sectors corresponding to the (continued on next page)

mission areas. The structure must be able to produce logistic support data by FYDP program, program element (PE), appropriation, and cost category, but these capabilities are of lower priority than the capabilities to produce resource information by logistic function or sub-function and weapon system.

(2) Data by weapon system should be routinely displayed on LRA formats in aggregated categories; for example fighters or attack categories for aircraft and carriers or cruisers for ships. The Navy data base should be able to produce, upon request, logistic support data for specific weapon systems such as for selected aircraft by Type, Model, and Series. OSD would plan to identify these specific weapon systems in implementing the LRA requirement.

(3) All installation support resources should be included in the logistic data base structure; however, it is not necessary to show these resources separately by dedicated logistic facilities, tenant logistic facilities, and all other facilities. Installation support resources should be split between real property maintenance activities and station operations. Resources for station operations should be shown in further detail by sub-functions. This includes a separate identification of installation support resources required for support of medical activities.

(4) Transportation should be shown as a separate major logistic function.

(5) Costs associated with Subsistence and Permanent Change of Station of personnel should not be included in the structure.

(6) In the Maintenance of Material function, it is unnecessary to include the capability to develop separate displays of all maintenance resources by work breakdown structure (WBS) and by work performance category (WPC). A single structure representing a combination of important WBS and WPC information elements should be developed for maintenance. Also, the capability to show data in some of the sub-functional areas identified by IDA is not required. For example, in Organization Maintenance it is necessary to show

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(Cont'd) three FYDP "cost categories:" research and development, investment, and operating. The structure groups manpower and dollar resources by logistic function and sub-function within these cost categories.

maintenance resources only by material category such as Aircraft and Associated End Items and Ships and Associated End Items. Greater detail is required at the Depot level, but even at this level it is unnecessary to show maintenance resources divided into all of the WBS or WPC groupings. For example, the only work performance breakdown required is to show separately those resources consumed or planned for consumption, for maintenance and repair, and for modification.

(7) No attempt should be made to distribute, by weapon system, logistic resources required to perform such functions as Central Inventory Control Point Operations and Procurement Operations. There should be a sound basis for measuring with reasonable accuracy the logistic resources attributable to a given weapon system before requirements are established to distribute them in this manner. Allocations designed to spread all logistic resources by weapon system are not desired.

(8) Within the various logistic functions it is not necessary to provide the same level of detail for all subfunctions or for all program years. For example, more aggregated data may be provided in the LRA for program years 3, 4, and 5 than for the budget year and the year immediately following that year.

(9) Manpower and material costs should be shown separately for organic Navy activities at all levels. (IDA interpreted this division of costs to apply to the Maintenance Support function only.)

(10) OSD believes it will be difficult to provide Security Assistance Program data for an LRA in the same categories as for the Navy although the actual functions performed parallel those in support of the Navy. IDA's work on the Security Assistance Program should be accorded a lower priority than the rest of the task.

(11) The final report should compare briefly the LRA and the Operating and Support (O&S) Cost Guide structures for aircraft and ships developed by the Logistics Management Institute (LMI). LMI has prepared preliminary drafts of these structures that could be used in making operating and support cost estimates for proposed future weapon systems. IDA should also comment on what would have to be done to minimize the differences between the LRA and O&S Cost Guide structures.

C. IDA RESPONSES TO OASD/I&L GUIDANCE

In response to the preceding guidance, IDA prepared a new proposed final logistic data base structure that identifies all logistic support resources by nine major logistic functions. This structure is described and discussed in Chapter II of this Study. Based on the OASD/I&L guidance, the major changes incorporated into the Phase II proposed final structure are:

(1) Nine major logistic functions are formed out of the twenty-eight that are in the Phase I ideal structure.

(2) Maintenance function and sub-functions combine WPC and WBS to reduce detail.

(3) Permanent Change of Station (PCS) and Subsistence are excluded.

(4) Research and development work in support of Navy logistic support operations is identified as a separate function with five sub-functions.

(5) The nine major logistic functions contain investment sub-functions where appropriate. For example, Investment in Logistic Support Hardware, which includes initial spares, replenishment spares, war reserve stocks, and support equipment and data, is a sub-function under the Material Support major logistic function.

Other adjustments to the ideal structure to produce the proposed final structure are discussed in Chapter II.

D. THE LOGISTIC RESOURCE ANNEX FORMATS

As stated earlier, IDA Paper P-1194 includes thirteen sample formats for display of logistic resources in the proposed DNFYP Logistic Resource Annex. As soon as the proposed final logistic resource data base structure was prepared, we re-examined the formats to determine if they were still suitable as resource displays.

Since the final structure does not contain the same level of detail of data in some areas as the P-1194 structure,

major revisions were required in some of the formats. Some new formats were developed based on research performed subsequent to the submittal of the Phase I paper. After we completed a new proposed set of formats for display of LRA data, we discussed them with interested OSD and Department of Navy offices. Then we completed the final set of formats upon which we propose to display the logistic support data in the DNFYP Logistic Resource Annex.

E. THE SECURITY ASSISTANCE PROGRAM

The Security Assistance Program (SAP) presented special problems in the conduct of our research on this task. The Navy uses special procedures for developing programs and budgets and for administering the logistic resources consumed in supporting Foreign Military Sales (FMS) and Military Assistance Program (MAP) grant aid and training. These procedures differ in many important respects from those used for direct Navy programs,[1] and as a result it is difficult to measure the Navy logistic resources consumed by logistic function in support of the SAP.

In completing work on Security Assistance as it relates to the LRA final structure and formats presented in this Study, we proceeded in accordance with our plans originally developed as part of the Phase I research. Chapter II of this Study presents the final IDA logistic data base structure which includes provisions for resource requirements associated with logistic support provided by the Navy to all of its customers including the SAP.

Chapter III of this Study presents the IDA concept for a published document, similar in design to the FYDP Procurement

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[1]John D. Morgan, et al., *op. cit.*, pp. 167-219.

Annex, consisting of a set of formats displaying information elements from the final structure to provide visibility into the Navy's allocations of logistic resources to support approved programs, including those in Security Assistance.

Appendix E of this Study describes and discusses the existing and planned Navy Security Assistance data systems that support the Navy's Security Assistance portion of the DoD PPBS.

The remaining Security Assistance requirements of the task order, primarily relating to future Security Assistance projections, are met in IDA Paper P-1248.

F. SUMMARY

This Study, in conjunction with IDA Paper P-1194, presents and describes a complete system to develop and produce a Logistic Resource Annex for the Department of Navy Five Year Program. We are confident that data systems exist or can be developed with acceptable levels of resource application by the Navy to establish a final logistic resource data base.

Key officials in OSD and the Department of Navy have agreed that the formats presented in this Study include the type of data they need to carry out their responsibilities in the DoD management system. Nevertheless, we consider the LRA and its associated data displays the "first generation" of a complete system to support DoD logistic management processes. In Chapter V of this Study we present some of our ideas for further research leading to long-range improvements in management of DoD logistic resources.

Chapter II

THE FINAL IDA LOGISTIC DATA BASE STRUCTURE

A. INTRODUCTION

This chapter presents IDA's final logistic resource data base structure from which the proposed Navy LRA could be extracted. Two related topics are also presented: an assessment of the capabilities of Navy data systems to produce the data required to fill each information element in the final structure; and a comparison between the IDA structure and the Logistics Management Institute (LMI) ship and aircraft data base structures presented in recent LMI Operating and Support Cost Guide Studies.[1]

The final IDA data base structure is a refinement of the data structure first presented in P-1194.[2] The step by step assembly of the structure in P-1194 provides discussions of its components that are useful for understanding the foundations of this chapter's final structure. These discussions include: the conceptual definition of an LRA data base; definitions of basic terms such as logistic information element and logistic function; and assessments of the capabilities of current and planned Navy data systems to provide data for an LRA data base. These P-1194 discussions are not repeated in this Study since they are available in the earlier Paper.

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[1]M. Fiorello, N. Betague and A. Frager, *Operating and Support Cost Estimates for Aircraft Systems - Cost Development Guide*, Logistics Management Institute, Washington, D.C., December 1975; M. Fiorello, J. Wilk, P. Wroblewski and R. Salzer, *Ship Cost Development Guide for Support Investment and Operations and Support Costs*, Logistics Management Institute, Washington, D.C., May 1976.

[2]John D. Morgan, et al., *op. cit.* See especially Chapters II and III.

B. DESCRIPTION OF THE CONCEPTUAL FRAMEWORK OF THE LRA DATA BASE STRUCTURE

Our concept of a data base structure to support the IDA-proposed LRA envisions a matrix of information elements that relate total Navy logistic resources (dollars and manpower) to the logistic functions and sub-functions performed in each fiscal year covered by the DNFYP. Total logistic resources are categorized in terms of nine basic logistic functions. Each of these basic functions is sub-divided into from one to six sub-functions to provide detailed information about the Navy's allocation of logistic resources. Table 1 presents a summary display of the nine basic functions and the major sub-functions that comprise the primary organization of the structure. A complete list of all sub-functions is presented later in this chapter and in Appendix A.

The information elements organized by the structure are the basic building blocks for the LRA. These information elements can be aggregated by DNFYP cost categories and appropriations within each function and sub-function. The resources displayed in this data base matrix include dollars and manpower (civilian and military).[1] The final structure has provisions to identify separately the resources (dollars and manpower) that relate to logistic support of direct Navy activities, the Naval Reserves, interservice support provided to the Navy by other Services, and logistic support provided by the Navy to customers other than its own organizations. This last category includes support provided by the Navy to other Military Services under Interservice Support Agreements and to the Security Assistance Program.

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[1]The manpower resource requirements apply only to logistic functions and sub-functions performed at organic activities. Manpower assigned to NIF and non-NIF activities are to be shown separately when both perform a significant amount of workload.

Table 1. THE LOGISTIC FUNCTIONS AND SUB-FUNCTIONS INCLUDED IN THE FINAL IDA LOGISTIC DATA BASE STRUCTURE (SUMMARY)

A. LOGISTIC RELATED RESEARCH AND DEVELOPMENT

1. Reliability and Maintainability of Equipment
2. Operational Resupply Techniques
3. Pollution Abatement
4. Energy Conservation
5. All Other Logistic Related Projects

B. MAINTENANCE

1. Organization Level
2. Intermediate Level
3. Depot Level
4. Investment in Maintenance Related Facilities and Equipment - Value

C. MATERIAL SUPPORT

1. Investment in Logistic Support Hardware - Value
2. Investment in Modification/Alteration/Conversion Kits - Value
3. Investment in Material Support Facilities and Equipment - Value
4. Supply Activities
5. Central Inventory Control Point Operations
6. Central Procurement Operations
7. Petroleum, Oil and Lubricants (POL) - Value
8. Stock-Funded Material (NON-ADD) - Value

D. TRANSPORTATION

1. Investment in Transportation Related Facilities and Equipment - Value
2. Second Destination Transportation - Value
3. Base Transportation

E. ENGINEERING SUPPORT (INCLUDES TECHNICAL ASSISTANCE)

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

F. INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

G. LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION

1. NAVMAT
2. NAVAIR
3. NAVSEA
4. NAVELEX
5. NAVFAC
6. NAVSUP
7. SSPO

H. MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES

1. Naval Petroleum Reserves
2. Industrial Preparedness
3. Printing Plants and Laundries
4. Central Logistic Training Activities
5. All Other Activities

I. INSTALLATION SUPPORT

1. Investment in Installation Support Facilities and Equipment - Value
2. Command and Administration
3. Real Property Maintenance Activities
4. Base Services
5. Base Communications
6. Support of R&D Appropriation Financed Activities

Logistic support resources are identified to a weapon system only if there is a logical basis for such identification. Resources are not prorated to weapon systems merely to allocate all Navy logistic resources to a major mission such as that represented by a weapon system. Two types of resources are addressed: resources that can be *explicitly identified* to a particular weapon system (e.g., weapon system-peculiar initial spares) and resources that can be *logically related* to weapon systems by a suitable proration technique (e.g., the allocation of spare parts used by more than one weapon system to individual weapon systems). A more detailed discussion of the IDA approach to identifying logistic resources to weapon systems is presented later in this chapter and in Appendix D.

The logistic functions and sub-functions presented in Table 1 should be envisioned as representing the rows of the data base matrix. The weapon systems and fiscal years for which resources are shown should be envisioned as representing columns of the matrix. Data at the intersection of matrix rows and columns will represent *unique* logistic information elements of the final structure. These logistic information elements will relate to either dollars or manpower (civilian and military), and represent resources used to perform logistic functions and sub-functions.

Conceptually, in attempting to isolate and utilize information elements from the final structure, the logistic analyst is operating within the analytical framework presented in Figure 1. This diagram illustrates that the final structure ultimately consists of logistic information elements at various levels of aggregation within functional and sub-functional categories. There are seven levels of aggregation in the final structure including the grand total logistic resource requirements entry.[1]

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[1]Within the aircraft modification and ship alteration and conversion categories shown at Level VI in Figure 1, kit and installation costs are identified separately. Although not shown in the figure, these data comprise Level VII.

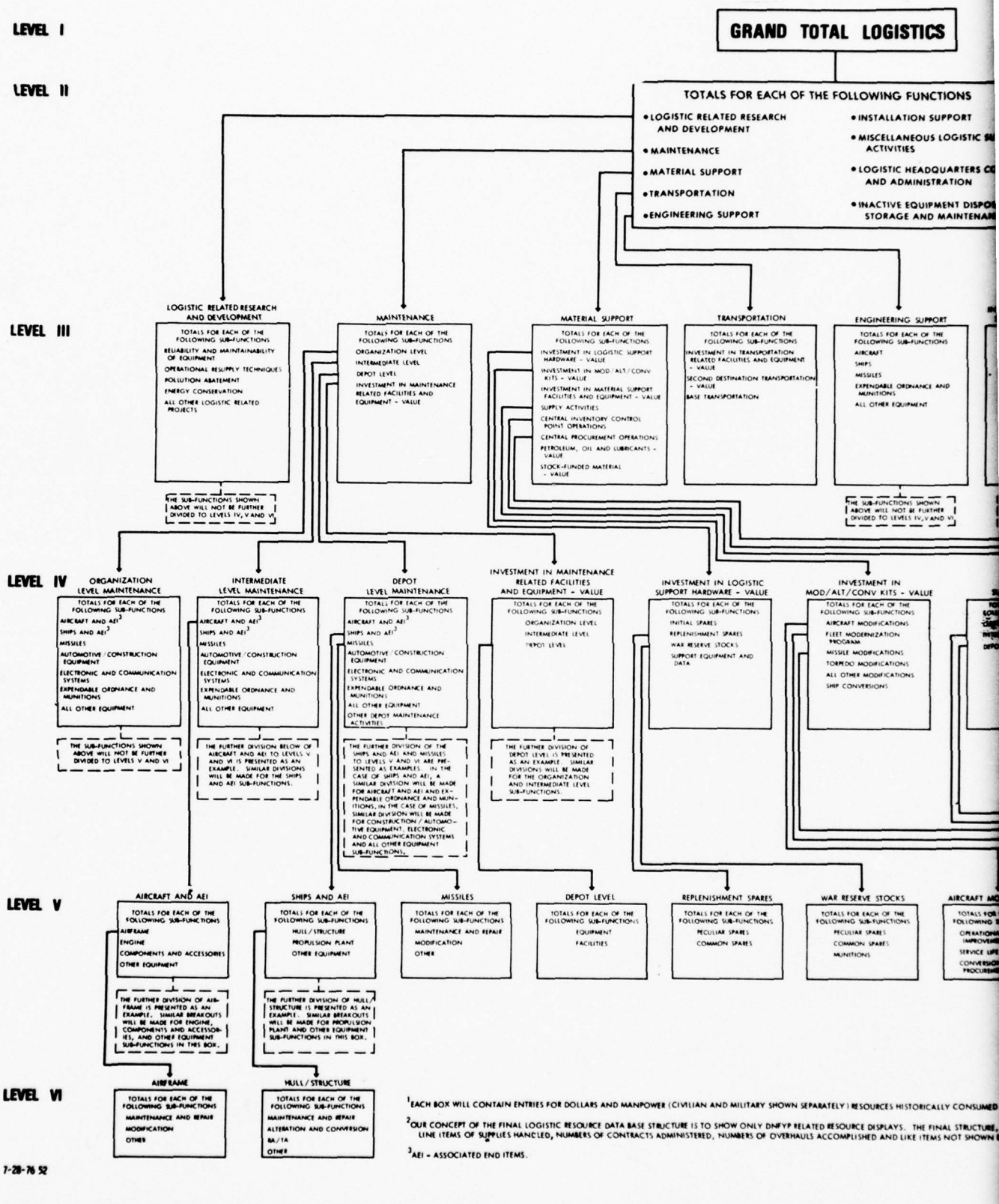
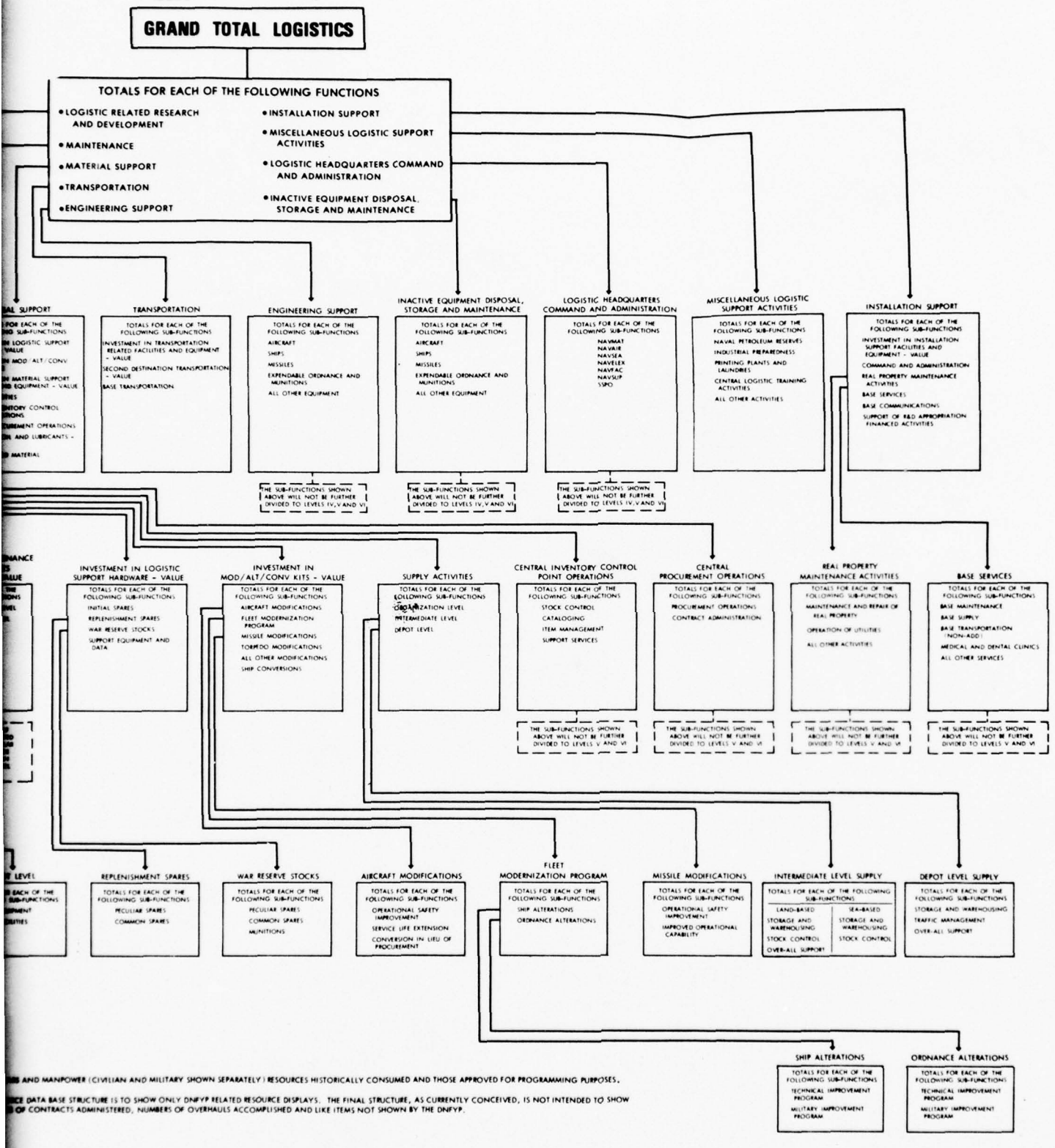


Figure 1. AN ILLUSTRATION OF THE CONCEPTUAL FRAMEWORK FOR THE IDA FINAL LOGI RESOURCE DATA BASE STRUCTURE [1,2]



AND MANPOWER (CIVILIAN AND MILITARY SHOWN SEPARATELY) RESOURCES HISTORICALLY CONSUMED AND THOSE APPROVED FOR PROGRAMMING PURPOSES.

DATA BASE STRUCTURE IS TO SHOW ONLY DNFYP RELATED RESOURCE DISPLAYS. THE FINAL STRUCTURE, AS CURRENTLY CONCEIVED, IS NOT INTENDED TO SHOW OF CONTRACTS ADMINISTERED, NUMBERS OF OVERHAULS ACCOMPLISHED AND LIKE ITEMS NOT SHOWN BY THE DNFYP.

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The number of levels of information element aggregation in a given functional category is directly related to the level of detail required for the data. For example, there are two levels of information element aggregation included in the Logistic Related Research and Development functional category, five levels in the Material Support functional category, and six levels in the Maintenance functional category.

Figure 1 is not designed to show the entire final structure by level of aggregation of information elements. It merely shows the concept of the structure emphasizing various levels. In developing data displays from this data base, information may be extracted from one or more functions and sub-functions at different levels and across or between levels.

Conceptually, the IDA final logistic data base structure can also be represented by the projected three dimensional diagram in Figure 2. In one dimension, logistic functions and sub-functions are arrayed along the Y axis. In another dimension, weapon systems are arrayed along the X axis. The flat surfaces in Figure 2, determined by these two dimensions, are the basic IDA logistic function versus weapon system matrix concept identifying information elements to specific fiscal years. The height above the XY surface, along the Z axis, represents ascending fiscal years.

Based upon this concept, a logistic information element, quantified either in terms of dollars or manpower, is located at an intersection of the X, Y, and Z coordinates. Thus, each information element describes a specific level of resources in terms of logistic function or sub-function performed, weapon system supported, and fiscal year to which the resources are allocated. A typical logistic information element is shown on the diagram of the data base as a single box and is defined in three dimensions. The information element box used as our example is located on the right side of Figure 2 (defined by

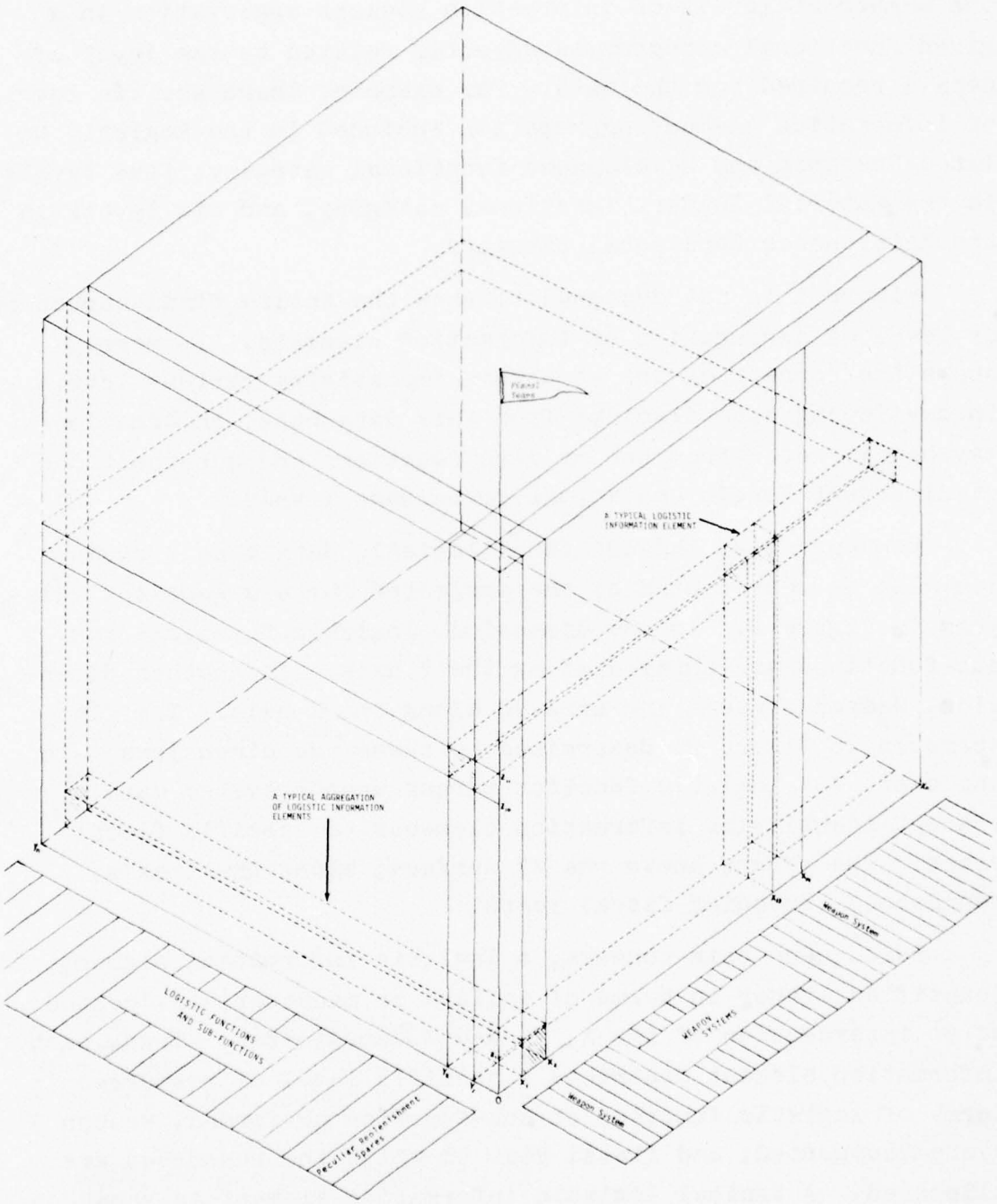

Figure 2. A THREE DIMENSIONAL CONCEPTUAL VIEW OF THE IDA FINAL LOGISTIC DATA BASE STRUCTURE

the coordinates $X_{13}X_{14}$ for the weapon system dimension, Y_1Y_2 for the logistic function dimension, and $Z_{10}Z_{11}$ for the fiscal year dimension). This information element contains the dollar value of weapon system-peculiar replenishment spares for a particular weapon system in a given fiscal year (such as FY 1978). Conceptually, the entire final data base structure is composed of these individual information elements.

Since the data base contains many individual information elements, it is possible to aggregate information elements down, across, and through the data base to derive various aggregations of data. As an example of such an aggregation, the rectangular block in the lower left section of Figure 2 represents an aggregation of information elements that contains the dollars (or manpower) for one weapon system in one fiscal year across all *relevant* logistic functions and sub-functions. This aggregation of information elements is represented by the coordinates X_1X_2 for the weapon system, $0Z_1$ for the fiscal year, and from $Y=0$ to $Y=Y_n$ for the total of all *relevant* logistic functions and sub-functions.

The logistic analyst, utilizing the conceptual data base structure presented in Figures 1 and 2, can develop useful aggregations of individual logistic information elements.[1] Specifically, the analyst can aggregate:

- Across the sub-functions within a given function. This shows either the total amount of resources identified to these logistic support services in single or multiple fiscal years, or the total amount of relevant logistic resources supporting a specific weapon system or homogeneous grouping of weapon systems in single or multiple fiscal years.

[1]Chapter III of this Study presents a complete discussion of the data displays selected to comprise the initial LRA.

- Across all logistic functions (at a given level of aggregation or for several levels) to determine either the total amount of Navy resources devoted to logistic support in single or multiple fiscal years, or the total amount of relevant Navy logistic resources supporting a specific weapon system or homogeneous grouping of weapon systems in single or multiple fiscal years.
- Across logistic information elements for complementary functions and sub-functions, and for different levels of aggregation in the final structure. This covers what IDA defines as a logistic process. Table 2 presents the IDA list of logistic processes and their component complementary functions and sub-functions. Logistic processes, viewed either in isolation or in terms of weapon systems supported, are not mutually exclusive aggregations of information elements. Processes are logical and consistent groupings of complementary logistic functions and sub-functions.

C. THE FINAL STRUCTURE LOGISTIC FUNCTIONS

This section presents a detailed review of the logistic information elements included in the nine logistic functions. Table 3 lists all of the sub-functions in the data base structure. Tables 4, 5, and 6 provide overviews of the data base structure which display the key logistic relationships incorporated into the basic structure. These tables display the extent to which logistic dollar and manpower resources are identified to logistic functions performed and programs supported in the data structure. Finally, Appendix A presents a complete illustration of the data base structure by matrix rows and columns for each logistic function.

The final data base structure required to support the LRA is the result of an iterative process in which IDA responded to OASD/I&L comments and decisions about the initial IDA data structure in Paper P-1194. Except for the addition of a logistic function for Transportation, the elimination of two logistic functions (Permanent Change of Station and Subsistence),

Table 2. THE LIST OF IDA LOGISTIC PROCESSES AND ASSOCIATED FUNCTIONAL AND SUB-FUNCTIONAL CATEGORIES[1]

A. MANAGEMENT OF LOGISTIC FACILITIES AND EQUIPMENT

1. Investment in Maintenance Related Facilities and Equipment - Value
2. Investment in Material Support Facilities and Equipment - Value
3. Investment in Transportation Related Facilities and Equipment - Value
4. Installation Support
5. NAVFAC Command and Administration Activities

B. SUPPLY SUPPORT

1. Material Support
2. Transportation
3. Modification/Alteration/Conversion Kit Installation[2]
4. Logistic Headquarters Command and Administration Activities[3]

C. MAINTENANCE OF WEAPON SYSTEMS

1. Maintenance
2. Engineering Support[4]
3. Logistic Headquarters Command and Administration Activities[3]

D. MANAGEMENT OF INACTIVE FACILITIES AND EQUIPMENT

1. Inactive Equipment Storage, Disposal and Maintenance
2. Industrial Preparedness

E. PROVISION OF SPARE PARTS SUPPORT

1. Investment in Logistic Support Hardware - Value (Initial and Replenishment Spares Only)
2. Maintenance of Engines and Components[5]

F. SUPPLY SYSTEM MANAGEMENT

1. Depot Supply Activities
2. Central Inventory Control Point Operations
3. Central Procurement Operations
4. Second Destination Transportation
5. Logistic Headquarters Command and Administration Activities[3]

G. MODIFICATION/ALTERATION OF WEAPON SYSTEMS

1. Investment in Modification/Alteration Kits - Value
2. Modification/Alteration Kits - Installation[2]

[1]The logistic process, viewed either in isolation or in terms of specific weapon and support systems supported, are not designed to be mutually exclusive. They represent a logical and consistent aggregation of information elements to highlight a specific area of interest.

[2]These resources can be located in the appropriate work performance category within the intermediate and depot maintenance sub-functional categories of the final structure.

[3]This will involve the allocation of the appropriate resources from the SSPO, each of the SYSCOMS and HQ. NAVMAT.

[4]Includes sustaining engineering and technical assistance support.

[5]These resources can be located in the appropriate material category work breakdown structure element within the intermediate and depot maintenance sub-functional categories of the final structure.

and the realignment of several logistic sub-functions, the final data structure closely parallels the resource coverage of the P-1194 structure.

In one important respect, the final data base structure remains unchanged from the P-1194 structure. The information elements that comprise the basic building blocks of the data structure are still coded to identify logistic resources to budget appropriations, unit identification codes, and program elements. Thus, the capabilities to sort logistic information by DNFYP cost categories, appropriations, and program elements are retained intact. Since each program element is unique to a single FYDP major program and Defense Planning and Programming Category, the capabilities also exist to sort by these classifications.

1. Logistic Related Research and Development

This function includes dollars and manpower associated with RDT&EN appropriation-financed projects that support overall Navy logistic support activities.[1] These data are shown in DNFYP Program 6 and in logistic-related R&D projects in operational test and evaluation program elements in Programs 1 and 2. The first four sub-functions within this function represent specific logistic-related R&D program areas. The last sub-function is an "all other" category designed to show that additional sub-functions should be added as required.

The sub-functions were developed on the basis of a review of the *Department of Navy Research, Development, Test, and Evaluation Budget Mini-MIP Book*. This document, submitted with the annual Navy budget, contains a detailed listing of R&D projects on a program element basis with a brief description of the scope of work and resource requirements for the budget year.

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[1]The maintenance associated with the ships and aircraft that support R&D programs (e.g., Test Range Ships) are reflected in the Maintenance function.

Table 3. THE LOGISTIC FUNCTIONS AND SUB-FUNC

A. Logistic Related Research and Development

1. Reliability and Maintainability of Equipment
2. Operational Resupply Techniques
3. Pollution Abatement
4. Energy Conservation
5. All Other Logistic Related Projects

B. Maintenance

1. Organization Level
   a. Aircraft and Associated End Items
   b. Ships and Associated End Items
   c. Missiles
   d. Construction/Automotive Equipment
   e. Electronic and Communication Systems
   f. Expendable Ordnance and Munitions
   g. All Other Equipment

2. Intermediate Level
   a. Aircraft and Associated End Items
      (1) Airframe
         (a) Maintenance and Repair
         (b) Modification (Installation)
         (c) Other
      (2) Engine Maintenance and Repair
      (3) Components and Accessories Maintenance and Repair
      (4) Other Equipment Maintenance and Repair
   b. Ships and Associated End Items
      (1) Hull Structure
         (a) Maintenance and Repair
         (b) Alteration (Installation)
         (c) Restricted Availability/Technical Availability
         (d) Other
      (2) Propulsion Plant
         (a) Maintenance and Repair
         (b) Alteration (Installation)
         (c) Restricted Availability/Technical Availability
         (d) Other
      (3) Other Equipment
         (a) Maintenance and Repair
         (b) Alteration (Installation)
         (c) Restricted Availability/Technical Availability
   c. Missiles
      (1) Maintenance and Repair
      (2) Modification (Installation)
      (3) Other
   d. Construction/Automotive Equipment
   e. Electronic and Communication Systems
   f. Expendable Ordnance and Munitions
   g. All Other Equipment

3. Depot Level
   a. Aircraft and Associated End Items
      (1) Airframe
         (a) Maintenance and Repair
         (b) Modification
            1. Installation
            2. Kit Costs (NON-ADD)
         (c) Other
      (2) Engine
         (a) Maintenance and Repair
         (b) Modification
            1. Installation
            2. Kit Costs (NON-ADD)
         (c) Other
      (3) Components and Accessories
         (a) Maintenance and Repair
         (b) Modification
            1. Installation
            2. Kit Costs (NON-ADD)
         (c) Other
      (4) Other Equipment
         (a) Maintenance and Repair
         (b) Other
   b. Ships and Associated End Items
      (1) Hull/Structure
         (a) Maintenance and Repair
         (b) Alteration
            1. Installation
            2. Kit Costs (NON-ADD)
         (c) Conversion
            1. Installation
            2. Kit Costs (NON-ADD)
         (d) Restricted Availability/Technical Availability
         (e) Other
      (2) Propulsion Plant
         [same sub-functions as shown in (1) above]
      (3) Other Equipment
         [same sub-functions as shown in (1) above]
   c. Missiles
      (1) Maintenance and Repair
      (2) Modification
         (a) Installation
         (b) Kit Costs (NON-ADD)
      (3) Other
   d. Construction/Automotive Equipment
      (1) Maintenance and Repair
      (2) Other
   e. Electronic and Communication Systems
      (1) Maintenance and Repair
      (2) Modification
         (a) Installation
         (b) Kit Costs (NON-ADD)
      (3) Other
   f. Expendable Ordnance
      (1) Ammunition Maint
      (2) Torpedo
         (a) Maintenance
         (b) Modification
            1. Installat
            2. Kit Costs
      (3) Mines/Depth Char
      (4) Bomb Maintenance
      (5) All Other Expend
         Maintenance and
   g. All Other Equipment M
   h. All Other Depot Main
      (1) Manufacture and
      (2) Other Depot Main

4. Investment in Maintenance
   a. Organization Level
      (1) Equipment
      (2) Facilities
   b. Intermediate Level
      (1) Equipment
      (2) Facilities
   c. Depot Level
      (1) Equipment
      (2) Facilities

C. Material Support

1. Investment in Logistic Su
   a. Initial Spares
      (1) Peculiar
      (2) Common
   b. Replenishment Spares
      (1) Peculiar
      (2) Common
   c. War Reserve Stocks
      (1) Peculiar Spares
      (2) Common Spares
      (3) Munitions
   d. Support Equipment and

2. Investment in Modificatio
   a. Aircraft Modification
      (1) Operational Safet
      (2) Service Life Exte
      (3) Conversion in Lie
   b. Fleet Modernization P
      (1) Ship Alterations
         (a) Technical Imp
         (b) Military Impr
      (2) Ordnance Alterati
         (a) Technical Imp
         (b) Military Impr
   c. Missile Modifications
      (1) Operational Safet
      (2) Improved Operatio

S AND SUB-FUNCTIONS INCLUDED IN THE FINAL IDA LOGISTIC DATA BASE STRUCTURE (DETAIL)

f. Expendable Ordnance and Munitions
   (1) Ammunition Maintenance and Repair
   (2) Torpedo
      (a) Maintenance and Repair
      (b) Modification
         1. Installation
         2. Kit Costs (NON-ADD)
   (3) Mines/Depth Charges Maintenance and Repair
   (4) Bomb Maintenance and Repair
   (5) All Other Expendable Ordnance and Munitions Maintenance and Repair
g. All Other Equipment Maintenance and Repair
h. All Other Depot Maintenance Activities
   (1) Manufacture and Assembly
   (2) Other Depot Maintenance Workload

Investment in Maintenance Related Facilities and Equipment-Value
a. Organization Level
   (1) Equipment
   (2) Facilities
b. Intermediate Level
   (1) Equipment
   (2) Facilities
c. Depot Level
   (1) Equipment
   (2) Facilities

terial Support

Investment in Logistic Support Hardware-Value
a. Initial Spares
   (1) Peculiar
   (2) Common
b. Replenishment Spares
   (1) Peculiar
   (2) Common
c. War Reserve Stocks
   (1) Peculiar Spares
   (2) Common Spares
   (3) Munitions
d. Support Equipment and Data

Investment in Modification/Alteration/Conversion Kits-Value
a. Aircraft Modification
   (1) Operational Safety Improvement
   (2) Service Life Extension
   (3) Conversion in Lieu of Procurement
b. Fleet Modernization Program
   (1) Ship Alterations
      (a) Technical Improvement Program
      (b) Military Improvement Program
   (2) Ordnance Alterations
      (a) Technical Improvement Program
      (b) Military Improvement Program
c. Missile Modifications
   (1) Operational Safety Improvement
   (2) Improved Operational Capability
d. Torpedo Modifications
   (1) Operational Safety Improvement
   (2) Improved Operational Capability
e. All Other Modifications
f. Ship Conversions

3. Investment in Material Support Facilities and Equipment-Value
   a. Organization Level
      (1) Equipment
      (2) Facilities
   b. Intermediate Level
      (1) Equipment
      (2) Facilities
   c. Depot Level
      (1) Equipment
      (2) Facilities

4. Supply Activities
   a. Organization Level
   b. Intermediate Level
      (1) Land-Based Overseas Supply Depots
         (a) Storage and Warehousing
         (b) Stock Control
         (c) Overall Support
      (2) Sea-Based
         (a) Storage and Warehousing
         (b) Stock Control
   c. Depot Level
      (1) Storage and Warehousing
      (2) Traffic Management
      (3) Overall Support

5. Central Inventory Control Point Operations
   a. Stock Control
   b. Cataloging
   c. Item Management
   d. Support Services

6. Central Procurement Operations
   a. Procurement Operations
   b. Contract Administration

7. Petroleum, Oil and Lubricants (POL)-Value
   a. Aircraft
   b. Ships
   c. All Other Equipment

8. Stock-Funded Material (NON-ADD)-Value
   a. Aircraft
   b. Ships
   c. All Other Equipment

D. Transportation

1. Investment in Transportation Related Facilities and Equipment-Value
   a. Equipment
   b. Facilities

2. Second Destination Transportation-Value
   a. Sealift (MSC)
   b. Airlift (MAC)
   c. Commercial Carrier

3. Base Transportation

E. Engineering Support

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munit
5. All Other Equipment

F. Inactive Equipment Disposal, Stor

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munit
5. All Other Equipment

G. Logistic Headquarters Command and

1. NAVMAT
2. NAVAIR
3. NAVSEA
4. NAVELEX
5. NAVFAC
6. NAVSUP
7. SSPO

H. Miscellaneous Logistic Support Act

1. Naval Petroleum Reserves
   a. Administration
   b. Development Engineering
2. Industrial Preparedness
   a. Planning
   b. Industrial Base Support
      (1) Production Facilities
      (2) Maintenance Facilities
3. Printing Plants and Laundries
4. Central Logistic Training Acti
5. All Other Activities

I. Installation Support

1. Investment in Installation Su
   a. Equipment
   b. Facilities
2. Command and Administration
3. Real Property Maintenance Acti
   a. Maintenance and Repair of
   b. Operation of Utilities
   c. All Other Activities
4. Base Services
   a. Base Maintenance
   b. Base Supply
   c. Base Transportation (NON-
   d. Medical and Dental Clinic
   e. All Other Services
5. Base Communications
6. Support of R&D Appropriation

IE FINAL IDA LOGISTIC DATA BASE STRUCTURE

- d. Torpedo Modifications
  - (1) Operational Safety Improvement
  - (2) Improved Operational Capability
- e. All Other Modifications
- f. Ship Conversions

3. Investment in Material Support Facilities and Equipment-Value
   - a. Organization Level
     - (1) Equipment
     - (2) Facilities
   - b. Intermediate Level
     - (1) Equipment
     - (2) Facilities
   - c. Depot Level
     - (1) Equipment
     - (2) Facilities

4. Supply Activities
   - a. Organization Level
   - b. Intermediate Level
     - (1) Land-Based Overseas Supply Depots
       - (a) Storage and Warehousing
       - (b) Stock Control
       - *(c) Overall Support*
     - (2) Sea-Based
       - (a) Storage and Warehousing
       - (b) Stock Control
   - c. Depot Level
     - (1) Storage and Warehousing
     - (2) Traffic Management
     - (3) Overall Support

5. Central Inventory Control Point Operations
   - a. Stock Control
   - b. Cataloging
   - c. Item Management
   - d. Support Services

6. Central Procurement Operations
   - a. Procurement Operations
   - b. Contract Administration

7. Petroleum, Oil and Lubricants (POL)-Value
   - a. Aircraft
   - b. Ships
   - c. All Other Equipment

8. Stock-Funded Material (NON-ADD)-Value
   - a. Aircraft
   - b. Ships
   - c. All Other Equipment

D. Transportation

1. Investment in Transportation Related Facilities and Equipment-Value
   - a. Equipment
   - b. Facilities

2. Second Destination Transportation-Value
   - a. Sealift (MSC)
   - b. Airlift (MAC)
   - c. Commercial Carrier

3. Base Transportation

E. Engineering Support

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

F. Inactive Equipment Disposal, Storage and Warehousing

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

G. Logistic Headquarters Command and Administration

1. NAVMAT
2. NAVAIR
3. NAVSEA
4. NAVELEX
5. NAVFAC
6. NAVSUP
7. SSPO

H. Miscellaneous Logistic Support Activities

1. Naval Petroleum Reserves
   - a. Administration
   - b. Development Engineering
2. Industrial Preparedness
   - a. Planning
   - b. Industrial Base Support
     - (1) Production Facilities and Equipment
     - (2) Maintenance Facilities and Equipment
3. Printing Plants and Laundries
4. Central Logistic Training Activities
5. All Other Activities

I. Installation Support

1. Investment in Installation Support Facilities and Equipment-Value
   - a. Equipment
   - b. Facilities
2. Command and Administration
3. Real Property Maintenance Activities
   - a. Maintenance and Repair of Real Property
   - b. Operation of Utilities
   - c. All Other Activities
4. Base Services
   - a. Base Maintenance
   - b. Base Supply
   - c. Base Transportation (NON-ADD)
   - d. Medical and Dental Clinics
   - e. All Other Services
5. Base Communications
6. Support of R&D Appropriation Financed Activities

Table 4. SUMMARY OF FINAL STRUCTURE RESOURCES SHOWN FOR ALL LOGISTIC FUNCTIONS EXCEPT MAINTENANCE, ENGINEERING SUPPORT AND INSTALLATION SUPPORT

Logistic Functions and Sub-Functions	Direct Navy		Naval Reserves		Security Assistance Program[4]	
	Dollars	Manpower[1]	Dollars[2]	Manpower[3]	Dollars	Manpower[1]
Logistic Related Research and Development	X	X				
Material Support						
Investment in Logistic Support Hardware - Value	X					
Investment in Modification/ Alteration/Conversion Kits - Value	X					
Investment in Material Support Facilities and Equipment - Value	X					
Supply Activities	X	X	X	X	X	X
Central Inventory Control Point Operations	X	X	X	X	X	X
Central Procurement Operations	X	X	X	X	X	X
Petroleum, Oil and Lubricants (POL)-Value	X					
Stock-Funded Material - Value	X					
Transportation						
Investment In Transportation Related Facilities and Equipment -Value	X					
Second Destination Transportation - Value	X					
Base Transportation	X	X	X	X		
Inactive Equipment Disposal, Storage and Maintenance	X	X	X	X	X	X
Logistic Headquarters Command and Administration	X	X			X	X
Miscellaneous Logistic Support[5] Activities	X	X				

[1]Includes military and civilian end-strengths shown separately for each fiscal year.

[2]Reflects funding by the RPN, O&MNR and MCONR appropriations. Direct Navy appropriations shown in Program 5 as support to the Naval Reserves, are included in the Direct Navy column.

[3]Consistent with the drill strengths in Programs 5, 8, and 9 of the DNFYP.

[4]Includes FMS and MAP shown separately for each fiscal year.

[5]The Central Logistic Training Activities sub-function will include, as applicable, the resources (dollars and manpower) with the Direct Navy Program and the Security Assistance Program (FMS versus MAP).

Table 5. SUMMARY OF FINAL STRUCTURE RESOURCES SHOWN FOR THE ENGINEERING SUPPORT AND INSTALLATION SUPPORT FUNCTIONS

Logistic Functions and Sub-Functions	Direct Navy			Naval Reserves		Security Assistance Program[1]		Family Housing Support[1]		Interservice Support By Navy[1]	
	Organic[1]		Contract[2]								
	Dollars	Manpower	Dollars	Dollars[3]	Manpower[4]	Dollars	Manpower	Dollars	Manpower	Dollars	Manpower
Engineering Support	X	X	X			X	X				
Installation Support											
Investment in Installation Support Facilities and Equipment-Value[5]	X										
Command and Administration	X	X		X	X						
Real Property Maintenance Activities[6]	X	X		X	X			X	X	X	X
Base Services	X	X		X	X			X	X	X	X
Base Communications[5]	X	X									
Support of R&D Appropriation Financed Activities[5]	X	X									

[1]Include the separate identification of NIF and non-NIF dollar and organic manpower (civilian and military) end-strengths for each fiscal year.

[2]Include the separate identification of NIF and non-NIF dollar requirements for each fiscal year.

[3]Consistent with O&MNR resources shown in Program 5 of the DNFYP.

[4]Consistent with the reserve military drill strengths shown in Program 5 of the DNFYP.

[5]Will not include the separate identification of NIF versus non-NIF.

[6]Include the NAVFAC O&MN resources shown in PE 91515 for GSA Leasing requirements.

Table 6. SUMMARY OF FINAL STRUCTURE RESOURC

Logistic Function and Sub-Function	Organic Facilities						
	Direct Navy (Total Dollars)	Naval Reserves[1] (Total Dollars)	Interservice By Navy (Total Dollars)	Security Assistance Program[2] (Total Dollars)	All Other (Total Dollars)	Total Manpower[3] (End-Strength)	Man C
MAINTENANCE							
Organization Level							
Material Categories	X	X				X	
Intermediate Level							
Aircraft/Ship Material Category	X	X				X	
Aircraft/Ship WBS/WPC	X	X					
Missile Material Category	X	X				X	
Missile WPC	X	X					
All Other Material Categories	X	X				X	
Depot Level							
Aircraft/Ship Material Category	X	X	X	X	X	X	
Aircraft/Ship WBS/WPC	X	X	X	X	X	X	
All Other Material Category	X	X	X	X	X	X	
All Other WPC	X	X	X	X	X		
Investment in Maintenance Related Facilities and Equipment-Value	X						

[1]Consistent with the reserve appropriation resources shown in Program 5 of the DNFYP. The MPN appropriation resources shown in Program 5, a

[2]Will include the separate identification of FMS versus MAP for each fiscal year.

[3]Will reflect organic civilian and active and reserve military end-strengths separately identified for each fiscal year. The reserve militar

TRUCTURE RESOURCES SHOWN FOR THE MAINTENANCE FUNCTION

es					Contract Facilities					Interservice For Navy (Total Dollars)
Other Dollars)	Total Manpower[3] (End-Strength)	Manpower Costs	Material Costs	All Other Costs	Direct Navy (Total Dollars)	Naval Reserves (Total Dollars)	Interservice By Navy (Total Dollars)	Security[2] Assistance Program (Total Dollars)	All Other (Total Dollars)	
	X	X	X		X					
	X	X	X		X					
					X					
	X	X	X		X					
					X					
	X	X	X		X					
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
		X	X	X	X	X	X	X	X	X

sources shown in Program 5, as support to the Naval Reserves will be shown in the Direct Navy column.

cal year. The reserve military personnel will be consistent with the drill strengths shown in Programs 5, 8, and 9 of the DNFYP.

2. Maintenance

In describing the information contained in the LRA structure, frequent references are made to material category, work breakdown structure (WBS), and work performance category (WPC). These terms are defined as:[1]

(1) Material Category--groupings of homogeneous items of material (e.g., aircraft and associated end items, ships and associated end items, missiles).

(2) Work Breakdown Structure--stratification of the maintenance workload within each material category consistent with hardware items generating the workload (e.g., airframe, engine and components, and accessories).

(3) Work Performance Category--mutually exclusive classification of maintenance workload in terms of what is done (e.g., overhaul, repair, calibration and analytical rework).

In IDA Paper P-1194, maintenance of material is identified as a logistic function, and organization (sea-based and land-based), intermediate (sea-based and land-based), and depot maintenance are the major sub-functions. In addition to this division by level of maintenance for each fiscal year, detailed information is included by weapon system, type of facility, material category, WBS, and WPC as prescribed by DoD 7220.29H and DODI 4151.15.[2]

The final structure shown in Table 3 retains the division of work by level of maintenance and material category. The separate WBS and WPC groupings in the P-1194 structure are

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[1]DODI 4151.15, *Depot Maintenance Support Programming Policies,* Enclosures 2 and 3.

[2]John D. Morgan, et al., *op.cit.*, pp. 68-70. The types of facilities are: Navy organic, contract, and interservice. The interservice workload represents only work accomplished for the Navy by other Services. The relevant material categories are: aircraft and associated end-items, ships and associated end-items, missiles, construction/automotive equipment, electronic and communication systems, expendable ordnance and munitions, and all other equipment.

merged into a single structure. In addition, the amount of detailed WBS and WPC information is reduced by consolidating some of the P-1194 categories.

WBS sub-functions are established at the intermediate and depot levels for aircraft and ship material categories. For the aircraft material category, the airframe and engine WBS sub-functions are retained and combined into two sub-functions. The number of WBS sub-functions is reduced in the ship material category so only the hull/structure and propulsion plant are identified explicitly in the final structure.

The number of separate WPCs is reduced to three (maintenance and repair, modification/alteration, and other) by aggregating the categories in the P-1194 structure.[1] For all sub-functions at the organization level and for most at the intermediate level, all work performed is identified to the aggregate *maintenance and repair category*. For most depot sub-functions, all three WPCs are used.[2] Two additional WPCs [Restricted Availability/Technical Availability (RA/TA) and Conversions] are used for the ship material category at the intermediate and depot levels.

In addition to the categories described above, an "Other Depot Maintenance Activities" category is included in depot maintenance. This sub-function is designed to capture those organic industrial fund depot maintenance workloads that cannot

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[1]For example, the maintenance and repair work performance category includes overhaul/progressive maintenance, repair, inspect and test to include calibration, renovation, and preventive maintenance.

[2]Kit costs are included as non-add entries in the depot modification/alteration WPC. The investment costs for kits included in the Maintenance function represent the value of the kits at the time of installation. Similar information elements are not included in the intermediate modification WPC, on the assumption that the material costs for modifications accomplished here are not significant. If this assumption is incorrect, the data base structure can be revised.

be logically included within other sub-functions in the structure.[1] Investment in Maintenance Support Facilities and Equipment-Value is established as a sub-function under the Maintenance function.

The column headings in Table 6 and Appendix A show the types of information that are available by sub-functions for the three levels of Navy maintenance. Basically, resources are identified by organic and contract categories with dollars and manpower shown as previously discussed. Dollar totals generally include manpower, material, and overhead costs based on Navy accounting systems.[2] Manpower end-strength information is identified only by material category since the capability does not currently exist to show this information at lower levels of detail.[3] Several more columns are required for depot maintenance because of the various customers who receive depot maintenance support from the Navy.

The IDA-developed final logistic support data base structure permits the display of virtually all organization, intermediate, and depot maintenance data by weapon system category

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[1]For example, this sub-function will include the manufacture and assembly programs conducted at the industrial fund Naval Shipyards, Naval Avionics Facility Indianapolis (NAFI), and Naval Ordnance Facilities (i.e., Naval Ammunition Depots, Naval Ordnance Stations, Naval Weapon Stations, and Naval Torpedo Stations).

[2]In the organization and intermediate maintenance sub-functions, only manpower and material costs are included. Depot maintenance includes the identification of overhead costs. The material cost element reflects only expense-type items--stock-funded material. In the case of organization maintenance, this involves identifying a unit's (e.g., ship and aircraft squadron) total supplies and equipage that are required for maintenance actions. In the case of intermediate maintenance, this refers to the stocks of material utilized by the activities to support other vessels [e.g., Repair of Other Vessels (ROV) resources shown in the tenders and repair ships program element].

[3]Civilian and active and reserve military manpower end-strengths are separately identified for each fiscal year. The reserve military manpower is consistent with the drill strengths shown in the DNFYP.

and for selected individual weapon systems. The IDA recommendation for handling this requirement is discussed later in this Study.

3. Material Support

Seven of the eight final structure sub-functions under Material Support are shown as logistic functions in the P-1194 structure.[1] The final structure sub-function Investment in Material Support Facilities and Equipment-Value represents the portion of the P-1194 structure function Investment in Logistic Facilities and Equipment-Value, dedicated to material support (land-based[2] and sea-based[3]) at various levels in the supply system (i.e., organization, intermediate, and depot). Within the Investment in Modification/Alteration/Conversion Kits-Value sub-function, the categories of modifications and alterations fit regular Navy programming categories.

In this function, resources are identified as weapon systems support only when they are either explicitly identified in data systems or logically related to weapon systems. Resources in the following sub-functions are identified in terms of weapon systems:

- Investment in Logistic Support Hardware-Value (excluding war reserve stocks),
- Investment in Modification/Alteration/Conversion Kits-Value,
- Supply Activities (excluding depot level supply),

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[1]For a detailed discussion of these logistic functions, the activities considered under each logistic function, and the Navy appropriations funding these activities, see John D. Morgan, et al., *op. cit.*, pp. 31-45.

[2]This could apply to investments such as a new warehouse at a Navy supply center or the procurement of a new computerized material handling system.

[3]This relates to investments such as the procurement of additional underway replenishment ships.

- Petroleum, Oil and Lubricants (POL)-Value (aircraft and ships only).

The following five Material Support sub-functions contain *only* direct Navy dollar data to measure resource consumption in the LRA:[1]

- Investment in Logistic Support Hardware-Value,
- Investment in Modification/Alteration/Conversion Kits-Value,[2]
- Investment in Material Support Facilities and Equipment-Value,
- Stock-Funded Material (non-add)-Value,
- Petroleum, Oil and Lubricants (POL)-Value.

Dollar resources and manpower end-strengths in organic Navy facilities for each fiscal year are displayed only for the following Material Support sub-functions:

- Supply Activities,
- Central Inventory Control Point Operations,
- Central Procurement Operations.

Both dollar and manpower resources are displayed separately for Direct Navy, Naval Reserves, and the Security Assistance Program (FMS and MAP).[3] In addition, within the Supply Activities sub-function, the depot supply activities include separate identification of NIF and non-NIF funded programs (dollars and manpower). The non-NIF funded programs represent primarily

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[1]The procurement appropriation resources shown opposite each line item for these sub-functions will be consistent, in the aggregate, with the resource requirements displayed in the Navy Procurement Annex.

[2]Resources for the installation of these kits are shown in the appropriate work performance category in the depot maintenance sub-function of the Maintenance function.

[3]These Security Assistance Program resources represent reimbursements to the Navy for depot level supply activities, central inventory control point operations and central procurement operations from the Security Assistance Trust Fund.

the operations of the Navy CONUS supply centers. The NIF-funded programs represent the receipt, storage, and issue of ammunition and the port terminal operations at the industrial fund Naval Ordnance Facilities.[1] These programs are work performance line-item entries in the Industrial Fund Budget A-2a Statement.

4. Transportation

The Transportation function was not included in the P-1194 structure as a separate function. It was established as the result of OASD/I&L guidance concerning data needs for analyzing Navy logistic support activities.

Of the three sub-functions within Transportation, two are included in the P-1194 structure.[2] Investment in Transportation Related Facilities and Equipment-Value is included under Investment in Logistic Facilities and Equipment-Value. Second Destination Transportation-Value is shown separately as a logistic function. In the final structure, Base Transportation is a major sub-function under Transportation and is also shown as a non-add entry within the Base Services sub-function of the Installation Support Function.

Direct Navy dollar resource requirements for each fiscal year are displayed for the Investment in Transportation Related

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[1]The manpower for these NIF funded programs are shown in PE 72031 of the DNFYP. The dollars for the receipt, storage and issue of ammunition are shown in PE 71111 of the DNFYP. Port terminal operations are purchased from the NIF by the Department of the Army.

[2]Other sub-functions such as Permanent Change of Station-Military Personnel and First Destination Transportation might be included in a more comprehensive transportation function, but they are excluded based upon discussions with OASD/I&L.

Facilities and Equipment-Value[1] and Second Destination Transportation-Value Logistic sub-functions. The Second Destination Transportation-Value sub-function also identifies separately the dollar resources associated with the Security Assistance Program (FMS and MAP).

Direct Navy and Naval Reserves dollar and Navy organic manpower resources for each fiscal year are displayed for the Base Transportation sub-function. The manpower data identify separately civilian and active and reserve military manpower end-strengths.

5. Engineering Support

In the P-1194 structure, the Sustaining Engineering Support and Technical Assistance Support functions are designed to account for logistic-related engineering support.[2] The final structure Engineering Support function consolidates these two P-1194 structure functions into one function. These two functions are consolidated because in our Phase II analysis we determined that Navy data systems are unable to isolate depot technical assistance and sustaining engineering support.

The sub-functions presented in the final structure are identical to those in the P-1194 structure, except that a separate sub-function is identified for expendable ordnance and

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[1]The procurement appropriation resources shown opposite each line item of the Investment in Transportation Facilities and Equipment-Value sub-functions are consistent, in the aggregate, with the resources displayed in the Navy Procurement Annex for each fiscal year.

[2]Sustaining engineering support includes engineering effort designed to assure safety of personnel, correct a proven performance deficiency, increase reliability and maintainability of equipment, achieve equipment and component standardization, simplify maintenance operations, and make existing equipment compatible with newer equipment entering the inventory of the operational forces. Technical assistance support includes advising, assisting and training operational force personnel on the installation, operation and maintenance of equipment. All of the manpower resource requirements are centrally administered in Program 7 of the DNFYP.

munitions-related engineering support. In the P-1194 structure, these resources are included as a non-identifiable subset of the resources displayed for all other equipment-related engineering support.

As shown in Appendix A, the engineering support dollar resources in each fiscal year are identified separately as Navy organic, contract, and total for the Direct Navy and Security Assistance Program (FMS and MAP).[1] In addition, dollar and organic manpower resources for the aircraft, ship, and missile sub-functions are identified to weapon systems.

The Navy organic portion distinguishes between NIF[2] and non-NIF[3] engineering support programs by sub-functions. The manpower resources include the separate identification of NIF and non-NIF civilian and military manpower end-strengths. The NIF manpower end-strengths are consistent with the NIF dollar resources shown in each fiscal year.[4]

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[1]The organic manpower resources expressed in terms of civilian and military end-strength separately identified in each fiscal year are displayed by Direct Navy and Security Assistance Program (FMS and MAP).

[2]These NIF dollar resources represent the industrial fund customer orders placed on Naval Aircraft Rework Facilities (PE 72007), Missile Facilities (PE 72009), and the Naval Ordnance Facilities (PE 72031) for engineering services, quality evaluation and logistic support. These work performance categories are line item entries on the Industrial Fund Budget A-2a Statement.

[3]These dollar resources reflect the operations of Navy organic activities financed by PE 78012--Logistic Support Activities and PE 78017--Maintenance Support Activities.

[4]When there is a significant amount of military manpower performing NIF engineering support, the organic NIF dollar resources (NIF customer orders) should be augmented to reflect the MPN appropriation financing these manpower. This is because military manpower are not billed to customers under the NIF.

6. Inactive Equipment Disposal, Storage and Maintenance

This function is identical to the comparable function in the P-1194 structure except that the resources associated with expendable ordnance and munitions are separately identified. In the P-1194 structure these resources are included in the "all other equipment" category.

Dollar and organic manpower resources[1] in each fiscal year are identified separately to Direct Navy and the Security Assistance Program (FMS and MAP). In addition, the expendable ordnance and munition sub-function includes the demilitarization program accomplished at the industrial fund Naval Ordnance Facilities.

7. Logistic Headquarters Command and Administration

This function and its sub-functions are identical to those in the P-1194 structure except that the DCNO (Logistics) sub-function is eliminated.[2]

Dollars and manpower resources to operate these headquarters activities in each fiscal year are shown for Direct Navy and the Security Assistance Program (FMS and MAP).[3] The manpower resources include civilian and military manpower end-strengths identified separately.

8. Miscellaneous Logistic Support Activities

The Miscellaneous Logistic Support Activities function is a grouping of miscellaneous logistic functions that cannot

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[1]The manpower resources are identified separately as civilian and military end-strengths.

[2]The NAVAIR sub-function includes the NAVAIR Fleet Representatives (LANTREP and PACREP). The NAVMAT sub-function includes the Naval Material Command Support Agency (NMCSA).

[3]These resources are the reimbursements that the Navy receives from the Security Assistance Trust Fund via the surcharge levied on the sales cases.

logically be included in the other eight clearly defined final structure functions. The All Other Activities sub-function includes miscellaneous Program 7 activities that are not included elsewhere in the final structure. This ensures that all Program 7 resources are included in the structure.

Generally, Direct Navy dollar and manpower resources are shown for each fiscal year with civilian and military manpower end-strengths identified separately. The Central Logistic Training Activities sub-function includes resources identified to the Security Assistance Program (FMS and MAP).

9. Installation Support

Three separate installation support-oriented logistic functions (dedicated logistic facilities, tenant logistic facilities, and all other facilities) are in the P-1194 structure. These functions are consolidated into one function in the final structure. The sub-functions (i.e., Command and Administration, Real Property Maintenance, Base Services, Operation of Utilities, and Base Communications) in the P-1194 structure are retained and realigned. Real Property Maintenance and Operation of Utilities sub-functions are included as identifiable information elements within a Real Property Maintenance Activities sub-function, and the Base Services sub-function has been further defined in the final structure. Base Services was divided so base transportation resources can be separately identified and shown in the Transportation function. The sub-function, Investment in Installation Support Facilities and Equipment-Value, represents the part of the P-1194 structure function, Investment in Logistic Facilities Equipment-Value, dedicated to Navy installation support capabilities. Finally, a separate sub-function is added to recognize explicitly the Support of R&D Appropriation-Financed Activities. In the P-1194 structure, this is a sub-function of the R&D function.

With the exception of resources for Investment in Installation Support Facilities and Equipment, Base Communications, and Support of R&D Appropriation-Financed Activities,[1] dollar and manpower resources for each fiscal year are identified separately to the Direct Navy, Naval Reserves, Support of Family Housing, and Interservice Support. The dollar resources distinguish between NIF[2] and non-NIF installation support programs by sub-function (i.e., Command and Administration, Real Property Maintenance Activities[3] and Base Services). The manpower resources include the separate identification of civilian and active and reserve military manpower end-strengths associated with NIF and non-NIF installation support programs by sub-function. The NIF manpower end-strengths are consistent with the NIF dollar resources in each fiscal year.[4]

D. CAPABILITIES OF NAVY DATA SYSTEMS TO PROVIDE LRA INFORMATION ELEMENTS

This section describes the capabilities of existing and planned Navy data systems to provide the data for the information elements that make up the final LRA structure. Data system capabilities are not discussed in depth since Chapter IV of the Paper P-1194 contains comprehensive coverage of Direct

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[1]These sub-functions include only Direct Navy resources.

[2]These NIF dollar resources represent the industrial fund customer orders placed on the Navy Public Work Centers (PE 72037) for installation support services (e.g., maintenance and repair of real property, operation of utilities, base services, etc.). These work performance categories are line item entries in the Industrial Fund Budget A-2a Statement.

[3]Real Property Maintenance Activities include maintenance and repair of real property, operation of utilities, and all other activities (e.g., fire protection, custodial services, refuse collection and disposal, etc.).

[4]When there is a significant amount of military manpower performing NIF installation support, the NIF dollar requirements (NIF customer orders) should be augmented to reflect the MPN appropriation financing these manpower requirements. This is due to the fact that military manpower does not represent a legitimate NIF charge to a customer, and is therefore not included in the customer order.

Navy logistic information systems.[1] Appendix E of this Study provides similar coverage of the Navy Security Assistance data systems.

The fundamental difference between the P-1194 data base structure and the final structure as discussed in this chapter is the arrangement of the information elements that make up the structures. Thus, the conclusions in P-1194 analysis about the capabilities of Navy data systems to furnish information elements remain valid. In fact, since a large number of the detailed WBS, WPC, and weapon system information elements making up the P-1194 data structure are combined into high level aggregations in the final structure, the final structure represents a considerably smaller workload on the Navy than that described in the P-1194 Paper. Navy claimants should be able to generate all the information elements required to support the entire LRA structure.

Most of the detailed discussions of existing and planned, primary and secondary Navy data systems in the P-1194 Paper are not repeated. This section highlights the data that are already available from Navy data systems and discusses the derivation of the information elements not already available.

1. Primary and Secondary Data Systems

Chapter IV of P-1194 presents detailed discussions of the capabilities of existing and planned Navy data systems to produce an LRA. Two categories of systems are considered. The primary data systems are the NCIS/FYDP Subsystem and the NARM, the two data handling systems now used by the Navy to produce the DNFYP, to update the Navy portion of the FYDP, and to produce the Procurement Annex. The secondary data systems are comprised of information systems used by the Navy to produce the basic data inputs to the primary systems.

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[1]John D. Morgan, et al., *op.cit.*, pp. 97-166. See especially Tables 16 and 17.

a. Primary Data Systems

In P-1194, we concluded that the NCIS/FYDP Subsystem, with minor modifications and with improved discipline in inputting data, is capable of supporting the LRA. The required modifications consist primarily of increasing the number of codes available for existing input data fields and, of course, revisions to the report generating system. We also concluded that the NARM, depending on the level of detail required, can be used to produce the LRA. Finally, we concluded that, if desired, these two systems can complement one another in producing the LRA.

b. Secondary Data Systems

Our P-1194 analysis concluded that three categories of secondary Navy data systems can provide all of the data required to fill the information elements in the P-1194 data structure. The three categories are:

(1) secondary data systems that currently produce data and the data are input into the NCIS/FYDP subsystem;

(2) secondary data systems that currently produce data but the data are not input into the NCIS/FYDP subsystem;

(3) the Navy Long Range Depot Maintenance Programming System which is not yet operational for ships, ordnance, strategic missiles, and construction/automotive equipment. The aircraft portion of this system is operational and included in category (2) above.

In some cases, extensive use of proration techniques is required to generate data for the lower levels of information element detail.

2. Manpower and Weapon System Data

The lack of detailed manpower and weapon system logistic data represents a general deficiency in the Navy's ability to support the LRA. For this reason, these two areas are treated

separately to avoid repetition in the discussion of the individual logistic functions that comprises the remainder of this section.

a. Manpower Data

Manpower data contained in the NCIS/FYDP currently consist of authorized military and civilian end-strengths at the PE level and, in some cases, at the Unit Identification Code (UIC) level. These data are not identifiable by logistic functions except to the extent that PEs can be uniquely associated with individual functions and aggregated sub-functions. Most of the manpower information elements required by the LRA data structure have to be developed from data in secondary data systems before the Navy can produce an LRA. As discussed in P-1194, once these elements are developed it is feasible to develop NCIS/FYDP subsystem codes that permit these data to be input into existing data fields.

Existing Navy data systems identify authorized manpower levels by function performed. The Standards Implementation Document System/Shore Required Operational Capability (SIDS-SHOROC) System,[1] recently operational in the Navy and currently being phased-in to generate manpower documents for units in the shore establishment, contains billet codes that can be uniquely related to the LRA information elements. The Ship Manpower Document (SMD) and Squadron Manpower Document (SQMD) manpower information systems used for operational forces contain similar billet codes that can be related to LRA information elements. In some cases, proration techniques or judgment decisions are required to develop input data for lower level sub-functions (e.g., for the billets in which one individual both operates and performs organization level maintenance on equipment such as a radio). The fact that the final LRA structure identifies manpower end-strengths only at higher

[1]John D. Morgan, et al., *op. cit.*, p. 128.

levels of aggregation (e.g., not below material category level in the maintenance function) makes this approach to developing LRA manpower information elements feasible.

b. Weapon System Identification

The NCIS/FYDP Subsystem identifies logistic resources to equipment supported for some procurement expenses. Generally, operating expenses are only identified if the PE contains a single kind of equipment.

The NCIS/FYDP provides a data field in which each input can be identified by material category, or by equipment or weapon system supported. This is not currently done; instead, the data field is used primarily to identify investment resources. Procedures can easily be established which require use of these data fields to identify the appropriate information elements.

3. Security Assistance Program Data Systems

The existing Navy International Logistics (NAVILO) Management Information System (MISIL) tracks all FMS cases and MAP orders through generic codes that can be reconciled to the logistic functions and sub-functions in the final LRA data base structure. This system provides an initial basis from which the information elements required to support the LRA can be derived. (See Appendix E for a complete discussion of the data systems that support the Navy Security Assistance Program which, in conjunction with MISIL and the SIDS/SHOROC system, may be capable of providing required information elements.)

MISIL provides dollar information on Navy resources consumed in depot maintenance, supply depot storage and warehousing, supply depot overall support, storage, and maintenance. MISIL identifies separately the support provided to FMS and MAP. The data are available for prior, current, and budget years and,

through proration techniques, projections can be made for resources required in the out-years to complete action on cases currently on the books. No manpower data are available from MISIL.

Some Navy Security Assistance manpower is currently displayed in two Program 10 program elements. PE 01009 shows personnel at the MAAGS, Missions and Military Groups financed by the Military Assistance Program (MAP). PE 02002 shows total personnel identified on a line item basis in FMS cases.

OP-63 will collect these personnel data (civilian and military) on those Navy activities involved in the Navy Security Assistance Program. Data collection efforts may provide the manpower resources associated with the following final structure logistic sub-functions:

- Supply Activities,
- Central Inventory Control Point Operations,
- Central Procurement Operations,
- Logistic Headquarters Command and Administration,
- Central Logistic Training Activities.

4. General Discussion

Table 7 summarizes the data currently available and not available in the NCIS/FYDP Subsystem for each of the nine basic logistic functions.[1] Each function is addressed in detail in the remainder of this section.

a. Logistic Related Research and Development

Both the NCIS/FYDP Subsystem and the NARM already include R&D R&D totals at the PE level. Since the first four R&D sub-functions

[1]Table 7 focuses on the NCIS/FYDP Subsystem because it contains lower level detailed information than the NARM. See John D. Morgan, et al., *op. cit.*, pp. 124-125.

Table 7. SUMMARY OF THE CAPABILITIES OF NAVY DATA SYSTEMS TO PROVIDE DATA FOR THE INFORMATION ELEMENTS REQUIRED TO SUPPORT THE LRA

LOGISTIC FUNCTIONS AND SUB-FUNCTIONS BY LEVEL OF DETAIL IN THE LRA DATA BASE STRUCTURE	CURRENTLY AVAILABLE IN NCIS/FYDP	NOT CURRENTLY AVAILABLE IN NCIS/FYDP	REMARKS
LOGISTIC RELATED R&D			
By PE Total	X		
By R&D Project		X	Available from program monitors and existing budget back-up data.
MAINTENANCE			
Organization Level		X	Data not currently available in NCIS/FYDP can be derived from manpower and 3M data systems.
Material Category		X	
Intermediate Level	X (Ships)	X (All Other)	
Material Category	X (Ships)	X (All Other)	
WBS		X	
WPC		X	
Depot Level	X		The Navy Long Range Planning System for depot maintenance can provide the full range of aircraft information elements. Similar data for ships and ordnance should be available by FY-78. No estimate of system availability for other material categories has been made. The Depot Maintenance Accounting System, to be implemented in FY-77, will provide a data base for developing factors. Modification and installation costs can be derived from claimants' files.
Material Category	X (Aircraft)	X (All Other)	
WBS		X	
WPC		X	
Investment in Facilities and Equipment	X		
Maintenance Level		X	Can be developed from data in claimants' files.
Detailed List of Major Items		X	
MATERIAL SUPPORT			
Investment in Support Hardware	X		
Spares and WRM	X		
Peculiar vs. Common		X	Can be derived from data maintained at Inventory Control Points.
Support Equipment and Data		X	
Investment in Modification, Alteration, Conversion Kits	X		
Material Category	X		
Type of Mod/Alt		X	NAVAIR and NAVSEA can provide data for aircraft and ships, all other data can be derived from claimants' files.
Investment in Facilities and Equipment		X	Can be developed from data in claimants' files.
Supply Activities			
Organization Level		X	Data not currently available in NCIS/FYDP can be derived from manpower data systems.
Intermediate Level	X (Ships)	X (All Other)	
WPC		X	
Depot Level	X		Program element titles available in NCIS/FYDP; detailed data could be derived from data in NCIS/OPS, manpower, and budget back-up data.
WPC		X	
Central ICP Operations	X		
Central Procurement Operations	X		
Performance Categories	X		
Petroleum, Oil and Lubricants		X	Some data exist in claimants' files but are not input into NCIS/FYDP; remaining data could be derived from O&MN data in NCIS/OPS and budget
Material Category		X	
Stock-Fund Material		X	

Supply Activities			
Organization Level		X	
Intermediate Level	X (Ships)	X (All Other)	Data not currently available in NCIS/FYDP can be derived from manpower data systems.
WPC		X	
Depot Level	X		Program element titles available in NCIS/FYDP; detailed data could be derived from data in NCIS/OPS, manpower, and budget back-up data.
WPC		X	
Central ICP Operations	X		
Central Procurement Operations	X		
Performance Categories	X		
Petroleum, Oil and Lubricants		X	Some data exist in claimants' files but are not input into NCIS/FYDP; remaining data could be derived from O&MN data in NCIS/OPS and budget back-up information.
Material Category		X	
Stock-Fund Material		X	
Material Category		X	
TRANSPORTATION			
Investment in Facilities and Equipment		X	Can be derived from data in claimants' files.
Second Destination Transportation	X		
Carrier		X	Can be derived from NCIS/OPS.
Base		X	Can be derived from NCIS/OPS and manpower data.
ENGINEERING SUPPORT		X	O&MN funds are available from NCIS/FYDP; remaining data can be derived from NCIS/OPS and from industrial fund, manpower, and budget back-up information.
Material Category		X	
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND WAREHOUSING	X		
Material Category	X (Ships & Aircraft)	X (All Other)	Data for other categories can be derived from Industrial Fund, NCIS/OPS, and budget back-up information.
LOGISTIC HEADQUARTERS, COMMAND AND ADMINISTRATION	X		
HQ Designation	X		
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES			
Naval Petroleum Reserves	X		
Performance Categories		X	Can be derived from data in claimants' files.
Industrial Preparedness	X		
Performance Categories		X	Can be derived from data in claimants' files.
Printing Plants and Laundries	X		
Central Logistic Training Activities	X		
All Other Activities	X		
INSTALLATION SUPPORT			
Investment in Facilities and Equipment		X	Can be derived from data in claimants' files.
Command and Administration		X	
Real Property Maintenance Activities		X	Can be derived from NCIS/OPS, Industrial Fund, manpower data systems, and budget back-up information.
Maintenance of Real Property	X		
Operation of Utilities		X	
All Other Activities		X	
Base Communications	X		
Support of R&D Appropriation Financed Activities	X		

Notes: 1. Manning data below PE and UIC levels in all cases would have to be derived from manning documents as discussed earlier in this chapter. Manpower costs can be derived by applying standard rates to manning levels.

2. As pointed out earlier in this chapter, in most cases techniques will have to be developed to identify logistic resources to equipment and weapon systems supported.

are defined at the PE level, these information elements currently are available. The fifth R&D subfunction is comprised of logistic-related projects included within other PE's in the FYDP structure. Navy R&D managers are required to define R&D programs in terms of resources to support discrete projects. The appropriate projects can easily be identified and coded for input into existing NCIS/FYDP and NARM data fields.

b. Maintenance

The NCIS/FYDP Subsystem currently provides none of the information elements required for organization maintenance. Manpower information elements can be derived by each claimant based on information contained in manpower documents as described above. Dollar resources for consumable material can be derived from Operating Target (OPTAR) data prepared by each claimant.

The NCIS/FYDP Subsystem currently provides total ship-related intermediate maintenance resources in support PEs in Programs 1, 2, and 5. Information elements for all other material categories under the intermediate maintenance subfunctions, and for work performance category information elements within the ship maintenance category, will have to be derived from existing intermediate level maintenance data sources [e.g., Material Maintenance Management System (3M)] and manpower information systems (SIDS/SHOROC).

The NCIS/FYDP Subsystem provides the Direct Navy and Naval Reserve information elements for total depot maintenance only, but data fields are available that can be used to process additional information input by Navy claimants. When the Long Range Depot Maintenance Support Programming System prescribed by DODI 4151.15 and the Uniform Depot Maintenance and Maintenance Support Cost Accounting and Production Reporting System prescribed by DODI 7220.29 are fully operational, the Navy should

be capable of providing all depot maintenance information elements required to support the LRA structure. In fact, these two systems require considerably more detail than the LRA structure.

c. Material Support

Identification of peculiar versus common replenishment spares to weapon systems and war reserve stocks is accomplished by using proration techniques. IDA research concludes that these techniques can be developed from data records[1] maintained in the data banks of the Navy central inventory control points, Aviation Supply Office, and Ships Parts Control Center.[2]

Some Petroleum, Oil and Lubricants (POL)-Value and Stock-funded Material-Value (non-add) resource data exist in the Navy claimants' data files since the claimants manage these levels of detail. These data are not input into the NCIS/FYDP Subsystem. If the remaining information on these resources by total or by associated subfunctions is not available, the data can be developed from factors derived from historical O&MN appropriation consumption data in the NCIS/Operations subsystem (NCIS/OPS), and prior, current, and budget year information presented in O&MN budget exhibits.[3]

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[1]These data records are maintained by unit identification code (UIC) and federal stock number (FSN). The Comptroller of the Navy assigns UIC numbers to each Naval activity (e.g., a command, ship, shore unit, aircraft squadron, special project or specialized function). The UIC is used for fund accounting purposes under appropriation accounting procedures; it is also used in the NCIS/FYDP Subsystem to identify resources for programming purposes.

[2]The Navy ship Visibility and Management of Support Costs (VAMOSC) study is pursuing this alternative for relating operating and support costs to weapon systems.

[3]The OP-20, Analysis of Aircraft Fuel and Oil, provides aircraft program data including total cost of fuel by PE. The OP-40, Fuel for Ships, presents program data including total fuel cost by PE and type of ship. The OP-41, Ships Supplies and Equipage, presents the ship requirements for consumable material by ship year, type of ship, and PE.

For aircraft modification programs, NAVAIR can provide weapon system-oriented information elements by type of aircraft modification. The data are prepared for the Navy POM for Class IV and Class V modifications and included in the Aircraft POM Annex. The weapon system-oriented information elements for investment in ship and ordnance alteration kits, in total and by type, require the use of data prepared by NAVSEA for the annual Navy POM dealing with the Fleet Modernization Program and included in the Ship POM Annex. Data in the Ship Alteration Management Information System (SAMIS), Amalgamated Military and Technical Improvement Program (AMT), and OPN and WPN Appropriations Budget Back-Up, can be used to derive these information elements. Although the Navy does not provide torpedo and missile modification program details in their POM, these information elements can be developed with reasonable staff analysis.

Resources (dollars and manpower) for the Depot Supply Activities, Central Inventory Control Point Operations, and Central Procurement sub-functions can be identified by the NCIS/FYDP Subsystem. They are displayed on a program element basis in Programs 5 and 7 of the DNFYP. These program elements, PEs 71111 and 52703--Supply Depot Operations, PEs 71112 and 57204--Inventory Control Point Operations and PEs 71113 and 57205--Central Procurement Operations, show dollar and manpower (civilian and military end-strengths identified separately) resources. The manpower resources reflect Direct Navy, Naval Reserves, and Security Assistance Program (FMS and MAP) requirements.

The FYDP Subsystem identifies the Central Procurement Operations dollar resources in terms of procurement operations and contract administration. Identification of resources to sub-functions for Supply Depot Activities, Central Inventory Control Point Operations, and Central Procurement Operations

(manpower only) (see Table 3) can be based on detailed historical functionally oriented O&MN consumption data in the NCIS/Operations Subsystem,[1] and on manpower data derived from the SIDS-SHOROC functional manpower requirement system.

d. Engineering Support

Information elements required for this function are not provided by the NCIS/FYDP Subsystem and the NARM. Navy claimants identify total direct Navy O&MN resources by function. These resources are not identified to organic (NIF versus non-NIF) and contract engineering support, but this can be accomplished by tabulating the data before it is input into the NCIS/FYDP Subsystem.

The Navy identifies organic NIF Engineering Support dollar resources for prior, current, and budget years.[2] These data are based on infromation derived from an Industrial Fund Budget A-2a Statement for the Naval Aircraft Rework Facilities, Missile Facilities, and Naval Ordnance Facilities. This statement displays the total workload of these facilities by unique work performance categories. Engineering services, quality evaluation, and logistic support are the three item entries on the A-2a Statement that apply to the Engineering Support function. Development of factors illustrating the percentage of total NIF facility workload dedicated to Engineering Support is feasible. These factors can be applied to the dollars and manpower displayed in the DNFYP for the appropriate NIF program elements to produce an approximation of the organic NIF total dollars and manpower. These resources represent total Engineering Support services purchased from NIF facilities by all customers.

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[1]The NCIS/Operations Subsystem contains detailed functionally oriented consumption data concerning Direct Navy and Reimbursable programs.

[2]These dollars represent expected revenues from projected customer orders. Most of these orders are financed from O&MN.

e. Inactive Equipment Storage, Disposal and Maintenance

Aircraft and Ship Inactive Equipment Storage, Disposal and Maintenance resources are displayed by program element in Program 7 of the DNFYP. The applicable PEs are: PE 78015--Naval Inactive Ship Maintenance Facilities, and PE 78016--Naval Contingency Reserve Aircraft. Other Equipment resources, comprised primarily of expenses for equipment utilized by the Naval Construction Battalions, are shown on a UIC basis in PE 72896--Base Operations.[2]

Missile and Expendable Ordnance and Munitions Inactive Equipment Storage, Disposal and Maintenance are accomplished at the industrial fund Missile Facilities and Naval Ordnance Facilities. Customer orders on these facilities are identified in terms of a work performance category on the Industrial Fund Budget A-2a Statement for prior, current, and budget years. Factors developed from these statements should be reasonably accurate measures of workload for Inactive Equipment Storage, Disposal and Maintenance. These factors can be applied to the dollars and manpower displayed in the DNFYP for the Missile Facilities and Naval Ordnance Facilities NIF program elements.[2]

f. Installation Support-Related Sub-Functions

Resources for Investment in Installation Support Facilities and Equipment are identified from installation support UICs in the procurement (OPN) and military construction appropriation reports by program elements in the NCIS/FYDP Subsystem. Base communication resources (dollars and manpower) are identified directly in PEs in DNFYP Programs 2, 3, 5, 7, 8, and 9. Resources for support of R&D-financed activities are identified

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[1]The UIC corresponds to the Naval Construction Battalion Support Center at Davisville, Rhode Island, whose mission is to store and maintain NAVFAC-related pre-positioned war reserve equipment.

[2]PE 72209 and PE 72031.

in installation-support program elements in Program 6 of the DNFYP.[1]

Total Direct Navy (NIF and non-NIF) dollar resources for Station Operations (of which Command and Adminstration, Base Services, Operation of Utilities, and All Other Real Property Maintenance Activities are non-identifiable subsets) and Maintenance and Repair of Real Property are identified in a special O&MN and O&MNR appropriation report produced from the NCIS/FYDP Subsystem data base.[2]

Currently, the Navy does not have the capability to distinguish between NIF and non-NIF Direct Navy dollar resources for installation support. One approach is to compare Total Direct Navy Station Operations and Maintenance and Repair of Real Property resources shown in the FYDP Subsystem, with the level of O&MN customer orders in the customer-oriented industrial Fund Budget A-3a Statement for the industrial fund Navy Public Work Centers (PE 72037). The difference represents non-NIF dollars.

Establishing the split between NIF and non-NIF dollar resources makes the Inudstrial Fund Budget A-2a Statement useful for developing factors to identify these NIF resources (e.g., Maintenance and Repair of Real Property, Base Services, and Operation of Utilities). The A-2a Statement displays the total workload of the Public Work Centers by work performance categories, and it is the complement to the A-3a Statement which displays the total workload by appropriations (customers)

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[1]PE 65351--Pacific Missile Range, PE 65851--Facilities and Installation Support, PE 65864--Test and Evaluation Support, PE 65852--Atlantic Undersea Test/Evaluation Center (AUTEC), and PE 65855--Naval Arctic Research Laboratory (NARL) - Point Barrow.

[2]Station Operations and Real Property Maintenance (i.e., Maintenance and Repair of Real Property) Budget Classification Codes (BCCs) are used to input O&MN resources on a UIC and PE basis into FYDP Subsystem data base. The special O&MN and O&MNR report is the SP-70.

purchasing NIF installation support services. The NCIS/ Operations Subsystem contains detailed historical functionally-oriented O&MN consumption data that can be used to derive factors for identifying non-NIF dollar resources by sub-functions.

Resources to support Family Housing are identified by program elements in Program 8 of the DNFYP: PE 88025--Family Housing Defense (Operations), and PE 88026--Family Housing Defense (Maintenance). These dollar resources are primarily NIF customer orders placed on the industrial fund Navy Public Work Centers by the Family Housing Defense appropriation administered by the Navy. These resources can be compared with the Family Housing Defense appropriation customer orders on an Industrial Budget A-3a Statement to establish a split between NIF and non-NIF dollar resource requirements.

The Interservice Support provided by the Navy to other Services is displayed for prior, current, and budget years. These data are based on information derived from an Industrial Fund Budget A-3a Statement. An analysis of A-3a Statement data over several years may permit the Navy to develop a reasonable and accurate level of effort factor for these dollar resources in the out-years.

Although dollar resources are presented in terms of Station Operations and Maintenance and Repair of Real Property, only total (NIF and non-NIF) manpower (civilian and military identified separately) performing station operations and maintenance and repair of real property are identified in the DNFYP. Total NIF manpower resources are shown in the industrial fund Navy Public Work Centers program element--PE 72037. Non-NIF manpower are derived by aggregating installation support-manpower in program elements in Programs 2, 3, 5, 7, 8, and 9. Further identification of these resources by sub-function can be made through data in the SIDS-SHOROC manpower requirements system. The distribution of these manpower data can be used to identify total

installation support dollar resources (NIF and non-NIF) to the appropriate subfunctions.

E. THE RELATIONSHIP OF THE LMI OPERATING AND SUPPORT COST GUIDE DATA ELEMENT STRUCTURES TO THE FINAL IDA LOGISTIC DATA BASE STRUCTURE

This section compares the final IDA logistic data base structure and the Operating and Support Cost Guide structures for aircraft and ships developed by the Logistics Management Institute.[1] LMI prepared preliminary drafts of these structures that can be used in making operating and support cost estimates for proposed future weapon systems.

The final IDA logistic data base structure is built upon a specific definition of logistic support activities.[1] This definition is expressed in terms of nine distinct comprehensive functional categories and associated sub-functions (see Table 3). The final structure has provisions to identify separately the resources (dollars and manpower) that relate to logistic support of Direct Navy activities, the Naval Reserves, interservice support provided to the Navy by other Services, and logistic support provided by the Navy to customers other than its own organizations. This includes interservice support provided by the Navy to other Services and the Navy Security Assistance Program (FMS and MAP).

The LMI structures' cost elements contain the Direct Navy life cycle resource requirements that are identifiable in terms of weapon systems. Logistic resources are included among these requirements, but many of the weapon system-oriented resources in the LMI structure are not logistic resources. The life cycle

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[1]M. Fiorello, N. Betague, et al., *Operating and Support Cost Estimates.... op. cit.* M. Fiorello, J. Wilk, et al., *Ship Cost Development Guide.... op. cit.*

[2]John D. Morgan, et al., *op. cit.*, p. 2.

of a weapon system is addressed in terms of three general categories:

- Acquisition Cost Category (e.g., RDT&E, performance modifications, and system investment).
- Support Investment Cost Category (e.g., support equipment and data, initial spares, and war reserve stocks).
- Operations and Recurring Support Cost Category (e.g., all levels of maintenance, replenishment spares, and engineering support).

Operation and Support (O&S) costs are defined as including the Support Investment and Operations and Recurring Support Cost categories' data elements.

Table 8 displays the IDA logistic functions and sub-functions that are not explicitly included in the two LMI life cycle structures, and the LMI non-logistic cost element categories that are not included in the IDA logistic data structure.

In summary, the LMI structures are oriented toward the Direct Navy life cycle resource requirements that are to be identified in terms of weapon systems, of which logistics is a distinct subset. The IDA final structure focuses on all logistic support activities, whether identified to weapon systems or not, that relate to the full spectrum of Navy organizations, interservice support, and the Security Assistance Program.

Generally, the IDA final structure logistic functions and sub-functions that are to be identified in terms of weapon systems are included explicitly in the LMI data base structure (aircraft and ships). The IDA final structure logistic functions and sub-functions that are not included in the LMI structure are primarily resources that cannot be identified in terms of weapon systems.

Table 8. A SUMMARY LEVEL COMPARISON OF THE IDA FINAL STRUCTURE AND THE LMI DATA BASE STRUCTURES

IDA Final Structure Information Elements Not Included in the LMI Data Base Structure	LMI Data Base Structure Information Elements Not Included in the IDA Final Structure
• Logistic Related Research and Development • Investment in Maintenance Related Facilities and Equipment - Value (Sea-Based Intermediate Maintenance) • Intermediate (Land-Based and Sea-Based) Supply Activities • Investment in Material Support Facilities and Equipment - Value • Investment in Transportation Related Facilities and Equipment - Value • Base Transportation • Inactive Equipment Disposal, Storage and Maintenance • Miscellaneous Logistic Support Activities • Installation Support[1]	• Research, Development, Test and Evaluation Associated with the Introduction of the Weapon System to the Active Inventory • Procurement of the Weapon System • Project Management Associated with the Procurement of the Weapon System • General Training Related Services, Equipment and Facilities Associated with the Introduction and Operation and Maintenance of the Weapon System • Procurement of Expendable Munitions • Total Manpower Directly Associated with the Operation and Maintenance of the Weapon System (Except Organization Supply and Maintenance)

[1]In the aircraft data base structure there are provisions to identify the manpower and material associated with the Installation Support identifiable to the weapon system (e.g. Command and Administration, Real Property Maintenance, Base Services, Operation of Utilities and Base Communications). The two installation support related sub-functions that are not in the aircraft data base structure are: Investment in Installation Support Facilities and Equipment - Value and Support of R&D Appropriation Financed Activities. The ship data base structure has provisions to identify the resource requirements associated with piers, docks, anchorages, fuel storage sites, ammunition depots, etc., required to support the operation of the ships.

F. SUMMARY

The data base structure required to support the IDA-proposed LRA can be envisioned as a multi-dimensional matrix of information elements that describe the Navy's allocation of total logistic resources (dollars and manpower) in terms of functions performed and programs supported (i.e., support of direct and Reserve Navy activities, Security Assistance Programs and services provided by and for the Navy under Inter-service Support Agreements).

Total Navy logistic resources are categorized initially in terms of nine basic functions which comprise the primary organization of the data base structure. Each of these basic functions is sub-divided into from one to six sub-functions to provide increasingly greater detailed information. The information elements can be aggregated by DNFYP cost category, budget appropriation, and program element.

Current and programmed Navy data systems have the capabilities to provide all of the information elements required to support the IDA-proposed LRA data base structure. The NCIS/FYDP Subsystem and the NARM, the two primary data handling systems currently used by the Navy to update the DNFYP, require some modifications to handle the larger number of input elements and to generate the LRA formats. Secondary Navy data systems, those that generate the basic data which is processed and ultimately input into the NCIS/FYDP and the NARM, are also capable of supporting the LRA. In some areas extensive use of proration techniques is required. Key secondary data systems are the SIDS-SHOROC system, which could be used to generate manpower information elements, and the Long Range Depot Maintenance Data Systems required by OSD to be operational in the Navy during FY-77.

The Logistics Management Institute developed drafts of aircraft and ship cost element structures for use in reporting

projected variable weapon systems costs. The logistic-related cost elements in these two structures can be reconciled with the information elements prescribed by the IDA-proposed data base structure, but some IDA elements are not included in the LMI structure.

Chapter III

THE LOGISTIC RESOURCE ANNEX (LRA)

The comprehensive data base structure presented in the preceding chapter, and discussed in detail in Appendix A, is comprised of logistic information elements that support the design of a wide variety of formats for use in displaying information about the Navy's allocation of resources for logistic support. Given the availability of this large data base, this chapter discusses the set of formats selected by IDA to comprise the initial Logistic Resource Annex (LRA).

A. INTRODUCTION

The IDA concept for the initial LRA calls for a published document, similar in design to the FYDP Procurement Annex, consisting of a set of formats that provide improved visibility into the Navy's allocation of logistic resources to support approved programs. Thus, the LRA augments current FYDP publications. Since it does not contain a detailed narrative, the LRA does not replace the current Logistic Annexes and back-up data submitted by the Navy at various times during the PPBS cycle to support its program.

The information elements (the basic building blocks of the final logistic data base structure) are carefully defined to provide an extremely flexible data base capable of supporting displays of Navy dollar and manpower resources in terms of the logistic functions and sub-functions performed and equipment supported. This chapter presents the complete, integrated set of formats selected by IDA as most meaningful for displaying

Navy logistic support resources to facilitate DoD and DON planning, programming and analyses.[1]

In the selection of the final set of formats, emphasis was given to the problems of what portion of the data base to display on a recurring basis and to the design of each format. Several basic assumptions and guidelines were considered in reviewing the large number of formats evaluated in the Phase I and Phase II analyses. The most significant assumptions are listed here to provide a foundation for the detailed discussions presented in the remainder of this chapter.

(1) In the process of developing the FYDP to which the LRA applies, the Navy will build and maintain the detailed data base described in Chapter II. Thus, even though the LRA formats might not require the routine submission of specific data available in the LRA data base, the Navy will have the capability to respond rapidly to follow-on data requests that might be generated by initial analyses of the LRA.

(2) OSD will specify in the implementing instructions for the LRA, the specific weapon systems and groups of weapon systems to which resources are to be identified routinely in the data base that supports the LRA (see Chapter II). Thus, even though resources for a specific weapon system are not displayed separately in the LRA, the Navy will be able to respond rapidly to follow-on requests for information on these designated systems.

(3) Formats to be generated routinely will be limited to products of recurring general interest. Both summary and detailed displays are provided for this purpose, but "nice-to-have" formats, that at this time do not appear to warrant routine submission, have been avoided. Thus, LRA users will be able to identify gross resource allocation and trends in areas of general interest. In addition, users will be able to extract pertinent information from the various detailed formats and create displays that can be used to focus on a specific problem that may be of interest on a one-time basis.

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[1]As discussed in Chapter IV, in implementing the LRA OSD may choose to add or delete formats to emphasize specific logistic support functions.

(4) Formats are designed to display the same level of detail for each year. If in the future, a decision is made to require less detail for the later years of the period covered, the same formats could be used except that data would be displayed at the appropriate level of detail. It is possible, of course, to use different formats for those years for which less detail is required. These formats would be of the same general design except that the rows and columns would be adjusted to reflect the level of detail desired.

Based on these assumptions and guidelines, numerous formats were designed and evaluated. Individual formats as well as sets of formats were reviewed with both OSD and Navy functional managers and analysts. These reviews ensure that the final product provides visibility to support their needs. At the end of this process, a final set of formats was selected.

B. GENERAL DESIGN OF THE LRA

The proposed LRA formats are organized into four groups based on the area of primary focus. The relationship of these groups is shown in Figure 3. Each group comprises a separate section of the LRA. Detailed titles are used for each format so users can identify the specific format of interest from the list of titles at the beginning of the document.

As shown in Figure 3, Group S is comprised of overall summary displays. Detailed dollar and manpower formats to support the summary displays are included in Groups D and M, respectively. Dollar and manpower data are provided in separate groups so individual formats do not contain unwieldy amounts of data, and to focus attention on these two basic kinds of resources. Group W is comprised of formats that relate logistic resources for selected logistic functions and sub-functions (displayed at summary level in Group S) to the equipment or weapon systems supported.

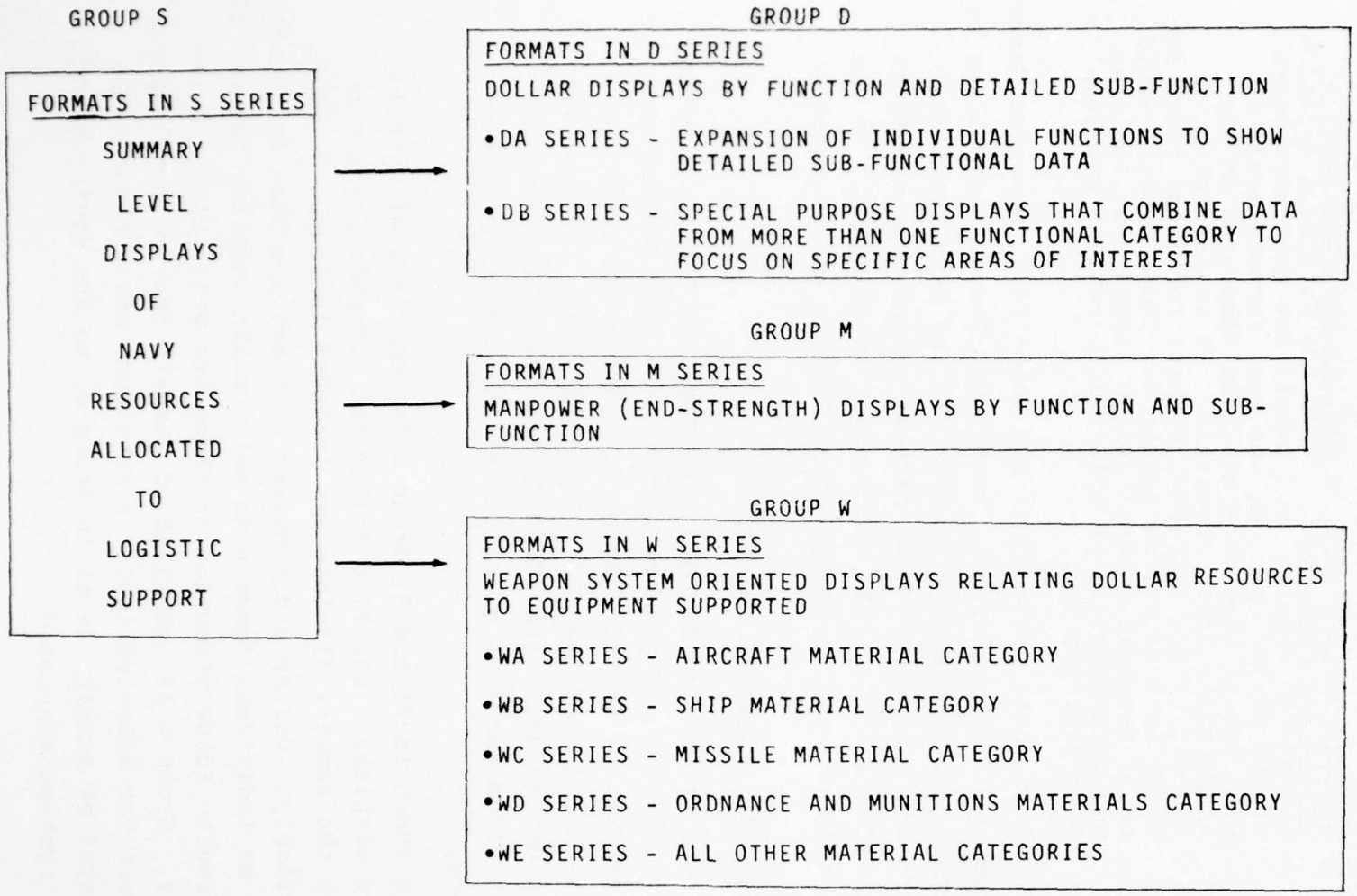

Figure 3. FORMATS BY GROUP AND DATA DISPLAYED

Total Navy logistic resources are defined as total dollars and manpower supporting Navy programs as well as the manpower supporting non-Navy programs for which the Navy is reimbursed. When dollars are displayed for non-Navy programs, the dollars are non-add in the sense that they are resources allocated by other agencies to purchase support from the Navy. The Navy cannot re-allocate these dollars to support Navy programs. To facilitate display of resources in these categories, the following terminology is adopted.

Navy Programs	Programs funded either by Navy or Reserve Navy appropriations; excludes programs initially paid for from Navy appropriations but later reimbursed from non-Navy appropriations and other sources (e.g., NAVILCO Trust Fund).
All Other Programs	Programs supported by the Navy for non-Navy activities but for which the Navy is reimbursed. Dollars displayed for these programs are, therefore, non-add in the sense that they are not a part of the "Direct Navy Program (TOA)" shown in the FYDP (e.g., FYDP Summary Table 1). Manpower to support these programs are, however, a part of the Navy's total manpower authorization.
All Programs	Total dollars to support Navy Programs and total manpower to support both Navy and All Other Programs as defined above.

These definitions establish the general relationship of the resources displayed in the LRA to the FYDP.

The formats within each LRA group are described in terms of the rows and columns that comprise each display. In general, the rows are used to identify selected logistic functions and sub-functions contained in the data base. The columns are used to display dollar and manpower resources allocated to perform these functions in terms of fiscal year, material or weapon system category supported, and other appropriate data. It is possible to reverse this design for some formats, but for the

initial LRA, a standardized design appears to be more advantageous since it facilitates tracking resources among the various formats.

The LRA formats are designed so data may be displayed for the seven year time period covered by the FYDP to which the LRA applies. Some of the individual formats will show data for only a single year. In these cases, a series of formats will be required to cover the entire seven year span even though--for illustrative purposes--only a single format covering the initial year is included in this report. Other formats are designed to display data on one format for all seven years. In this Study, however, columns are shown for only the first and last years to illustrate the data displays.

Each format is designed to be a complete display of applicable data, but there are numerous interrelationships among the various formats. Detailed titles are given so users can focus rapidly on specific areas of interest by scanning the List of Figures in the LRA. Each title identifies the general subject area of the format and describes the rows and columns in which resources are displayed. Formats are numbered sequentially within each group, except that an alphabetical suffix is used to identify formats that represent a closely related display of the data shown in the initial format in the numerical series. (For example, see Appendix C. Format DA-1C is an expansion of data in Format DA-1 which, even though it can be analyzed alone is perhaps best reviewed in the context of the basic format.) In addition, a prefix indicating the group to which each format belongs is used in this chapter to facilitate discussion of the various formats. This prefix may not be required in the published LRA since tabs probably will be used to identify each group.

Each of the four groups of formats shown on Figure 3 is discussed in a separate section in the remainder of this

chapter. Summary tables that list the titles of each format and provide comments about its general focus are used to introduce and provide an overview of the data provided by each group of formats.

The complete set of formats that comprises the LRA is contained in Appendix C. This appendix illustrates the LRA as it would be published, except that the time-span for which data would be displayed varys according to the implementation year. Also, for formats that are designed to display data for a single year, only the first of the series of seven separate formats is included. Finally, as discussed below, only some of the formats included in Group W in the published LRA are included in this Study.

C. GROUP S FORMATS: SUMMARY DISPLAYS

As shown in Figure 3, the formats in this group provide an overview of the Navy's allocation of logistic support resources in terms of the nine basic functions and, in some cases, major sub-functions. Generally, total dollars and manpower ceilings (military and civilian end-strengths) are displayed. The resources contained in every FYDP program element that are allocated to the performance of logistic functions have been extracted and summarized on these formats. These data provide visibility, on a highly aggregated basis, of that portion of total Navy resources allocated to logistic support as defined in Chapter I. All other formats in the LRA are selected disaggregations of data shown on the summary formats. Each successive format provides additional detail to emphasize specific areas of interest. Totals are displayed on all formats to facilitate relating resources displayed among the formats.

Table 9 describes each format in this group. Routine displays of data by major FYDP programs, Defense Planning and Programming Categories (DPPC), and budget appropriations are

confined to summary levels only. As pointed out in Chapter II, identification of resources in these categories is possible since each information element in the data base is identified by program element and appropriation.[1]

D. GROUP D FORMATS: DETAILED DOLLAR DISPLAYS

As shown in Figure 3, the formats in this group are separated into two subsets to emphasize a basic difference in focus. Both subsets display detailed dollar data to support the aggregate functional data displayed in the Group S formats. The formats in the first subset ("Series DA" in Figure 3) are straight-forward expansions of individual functions that display on a selective basis most of the information contained in the data base. Functional integrity is maintained in the sense that data from more than one function are not combined. Thus, LRA users, regardless of their areas of primary interest and staff responsibilities, are able to identify data about the Navy's allocation of resources for each function in separate formats.

The formats in the DA Series are listed in Table 10. The format title, together with the comments presented for each format, provide an overview of the data displayed and the relationships to other formats. Formats DA-1 through DA-7 each address one of the nine basic logistic functions so, in general, all data for each function are displayed in one location. Separate formats are not provided for two of the nine functions (Logistic Related Research and Development, and Inactive Equipment Disposal, Storage and Maintenance). Only limited detail is contained in the data structure for these areas so separate formats are not required. All detail for Logistic Related Research and Development is displayed in Format S-4. Since the

[1]Each program element is, of course, uniquely associated with a single FYDP major program and DPPC classification.

Table 9. LIST OF GROUP S FORMATS: SUMMARY LEVEL DISPLAYS

FORMAT NUMBER*	TITLE	GENERAL FOCUS
S-1	TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTION: DOLLARS AND MANPOWER END-STRENGTHS, FY 78-84	Top level overview by nine functional categories only; total Navy resources to support both Navy and Non-Navy Programs.
S-2	TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTION AND MAJOR SUB-FUNCTIONS: DOLLARS AND MANPOWER END-STRENGTHS, FYDP MAJOR PROGRAMS, FY 78-84	Overview by FYDP Major Programs.
S-3	TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTION AND MAJOR SUB-FUNCTIONS: DOLLARS AND MANPOWER END-STRENGTHS, DEFENSE PLANNING AND PROGRAMMING CATEGORIES, FY 78-84	Overview by summary level Defense Planning and Programming Categories.
S-4	TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTION AND MAJOR SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Separates total Navy logistic support resources into two major components--support of Navy and All Other (Non-Navy) Programs.
S-5	TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF NAVY PROGRAMS BY FUNCTION AND BUDGET APPROPRIATION: DOLLARS, FY 78-84	Provides appropriation break-out for the nine functional categories.

*This format numbering system is used to facilitate discussion of the formats. The prefix may not be required in the published LRA since each group of formats would be separated by tabs.

AD-A047 379 INSTITUTE FOR DEFENSE ANALYSES ARLINGTON VA COST ANAL--ETC F/G 15/5
A SYSTEM TO PRODUCE A LOGISTIC RESOURCE ANNEX TO THE NAVY FIVE --ETC(U)
SEP 76 J D MORGAN, N B DAVIS, A B FULLER DAHC15-73-C-0200
UNCLASSIFIED S-484 IDA/HQ-77-18707 NL

2 OF 3
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A047379

Table 10. LIST OF GROUP A FORMATS (DA SERIES): DETAILED DOLLAR DISPLAYS

FORMAT NUMBER*	TITLE	GENERAL FOCUS
DA-1	MAINTENANCE RESOURCES BY LEVEL OF MAINTENANCE AND MATERIAL CATEGORY: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Maintenance function only; one level of detail below Format S-4. Formats A-E provide additional detail for all sub-functions except that detailed data for investment in facilities and equipment are at Format DB-5.
DA-1A	DETAILED ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT PROGRAMS BY TYPE OF FACILITY PERFORMING THE WORK (NAVY ORGANIC OR COMMERCIAL), FY 78-84	Expands functional detail for the "Navy" column in Format DA-1.
DA-1B	DETAILED ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: MANPOWER, MATERIAL AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78-84	Provides cost detail, at the material category level for the "Organic" column in Format DA-1A.
DA-1C	DETAILED DEPOT LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY PROGRAMS, TYPE OF FACILITY PERFORMING WORK (NAVY ORGANIC, COMMERCIAL, OR OTHER MILITARY SERVICES), FY 78-84	Navy depot level resources to support Navy programs.
DA-1D	DETAILED DEPOT LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NON-NAVY PROGRAMS, TYPE OF FACILITY PERFORMING THE WORK (NAVY ORGANIC, COMMERCIAL, OR OTHER MILITARY SERVICES), FY 78-84	Navy depot level resources to support Non-Navy Programs. All dollars are non-add since the Navy should be reimbursed for costs incurred.
DA-1E	DETAILED DEPOT LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: MANPOWER, MATERIAL, "OTHER" AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78-84	Provides cost detail for all work shown in the "Organic" column of the two depot level displays.
DA-2	DETAILED MATERIAL SUPPORT RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Detailed data for the sub-functions shown in Format S-4 except that investment for facilities and equipment are at Format DB-5.
DA-3	DETAILED TRANSPORTATION RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Detailed data for the sub-functions shown in Format S-4 except that investment for facilities and equipment are at Format DB-5.
DA-4	DETAILED ENGINEERING SUPPORT RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, TYPE OF FACILITY PROVIDING SERVICE (ORGANIC--NIF AND NON-NIF--OR COMMERCIAL), FY 78-84	Detailed sub-functional data for the total shown in Format S-4.
DA-5	DETAILED LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Detailed sub-functional data for the total shown in Format S-4.
DA-6	DETAILED MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Detailed data for the sub-functions shown in Format S-4.
DA-7	DETAILED INSTALLATION SUPPORT RESOURCES BY SUB-FUNCTIONS: DOLLARS (NIF AND NON-NIF) TO SUPPORT NAVY (BY NAVY AND RESERVE NAVY APPROPRIATIONS), FAMILY HOUSING AND OTHER MILITARY SERVICES PROGRAMS, FY 78-84	Detailed data for the sub-functions shown in Format S-4.

*This format numbering system is used to facilitate discussion of the formats. The prefix may not be required in the published LRA since each group of formats would be separated by tabs.

only other detail for Inactive Equipment Disposal, Storage and Maintenance is identification of resources to material category, these data are displayed on Format W-1, discussed later in the chapter.

The formats in the DB Series are listed in Table 11. These formats are special purpose dollar displays. The first two formats, DB-1 and DB-2, separate the "Navy Programs" and "All Other Programs" columns shown in earlier formats into their major components. The remaining formats in this subset combine resources from more than one function to focus attention on specific areas in logistic support that are either managed as integrated programs or are best evaluated as a single program. These formats are the result of evaluating the logistic process concept discussed in Chapter II, except that the approach taken by IDA in selecting the final set of LRA formats is to minimize the number of "nice-to-have" single-purpose resource displays. Note, however, that resources associated with each of the processes shown in Table 2 in Chapter II can be compiled and displayed from the formats in Group D. For example, the Supply System Management Process (Item F. in Table 2), except for the Headquarters function, can be constructed easily by extracting data that are displayed explicitly on several of the formats. For the Headquarters function, resources assigned to NAVSUP are explicitly displayed although the percentages of SSPO and other NAVMAT activities that the analyst might want to include in the overall process are not shown separately. An allocation scheme has to be used to include these costs.

Format DB-3 provides an overview of all resources allocated to the modification and alteration of equipment. Installation and kit costs are displayed by material category in the year in which the end-items are modified. The investment costs for kits are those included in the Maintenance function, and they represent

Table 11. LIST OF GROUP B FORMATS (DB SERIES): SPECIAL PURPOSE DOLLAR DISPLAYS

FORMAT NUMBER*	TITLE	GENERAL FOCUS
DB-1	LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF NAVY PROGRAMS BY SUB-FUNCTIONS: TOTAL DOLLARS, NAVY AND RESERVE NAVY APPROPRIATIONS, FY 78-84	Separates the "Navy Programs" column from earlier charts (e.g., S-4) into two components by breaking out the Navy Reserve Appropriations.
DB-2	NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL OTHER PROGRAMS BY FUNCTION AND SUB-FUNCTIONS: DOLLARS FOR SUPPORT OF SECURITY ASSISTANCE (FMS, MAP AND TOTAL), OTHER MILITARY SERVICES (ARMY, AIR FORCE, MARINE CORPS AND TOTAL) AND OTHER ACTIVITIES, FY 78-84	Separates the "All Other Programs" column from earlier charts (e.g., S-4) into its major components.
DB-3	MODIFICATION AND ALTERATION PROGRAMS BY TYPE AND MATERIAL CATEGORY: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS - EQUIPMENT (KIT), INSTALLATION AND TOTAL COST, FY 78-84	Consolidated display of the total dollars allocated to the modification of equipment. Column totals represent annual funding for the program. Row totals represent total program costs for each category. Kit costs are shown as non-add since they represent kit procurement and, without additional data, cannot be associated with the installation costs shown in same year.
DB-4	PROVISION OF SPARE PARTS SUPPORT BY MATERIAL CATEGORY AND SUB-FUNCTION (REPAIR OF EXCHANGE-ABLES AND INVESTMENT FOR SPARES): DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84	Combines procurement with reparable repair costs to get a broader view of the total resources allocated to spares support.
DB-5	INVESTMENT IN LOGISTIC SUPPORT FACILITIES AND EQUIPMENT: DOLLARS TO SUPPORT NAVY PROGRAMS, FY 78-84	Consolidated display of dollars allocated to purchase of Logistic Support Facilities and Equipment. For some Functions, this is only format that provides this level of detail.
DB-6	LOGISTIC SUPPORT OF NAVY PROGRAMS BY OTHER MILITARY SERVICES BY FUNCTION AND SUB-FUNCTIONS: DOLLARS TO PURCHASE SERVICES FROM ARMY, AIR FORCE, AND MARINE CORPS ACTIVITIES, FY 78-84	Consolidated display of Navy dollar resources to purchase services under the Interservice Support Program.

*This format numbering system is used to facilitate discuss[illegible] the formats. The prefix may not be required in the published LRA since each group of formats would be separated by tabs.

the value of the kits at the time of installation.[1] The use of this cost is the only instance in the LRA in which data appear in the LRA that are not directly extracted from the FYDP data base. These data exist in the Navy and in some cases are explicitly addressed in POM and budget back-up data. This display can be extremely useful for comparing actual expenditures of resources with the amounts of funds approved for a modification when the program was first authorized.

Format DB-6 provides detailed information about Navy resources allocated to the purchase of goods and services from other military services. Thus, assuming the LRA is implemented DoD-wide, the dollars programmed by the Navy for interservice support can be evaluated and related to the manpower allocated to other military services to provide this support.

E. GROUP M FORMATS: DETAILED MANPOWER DISPLAYS

Table 12 lists the formats included in this group. These four formats provide detailed manpower data to support the totals displayed in the Group S formats. In general, all manpower data are consolidated in a single group of formats in lieu of displaying these data on each of the LRA formats. This approach is intended both to provide all manpower data in one place and to avoid burdening users of earlier charts with data that may not be required for recurring analyses. This approach means that a user must combine data from two charts if manpower and dollar resources are related to sub-functions in a single display. Note, however, that manpower costs are included in all formats and are explicitly identified on several of the formats.

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[1]The value of kits at the time of installation is shown as a non-add information element in the Maintenance function. Funds to purchase modification/alteration kits are included as information elements in the Material Support function.

Table 12. LIST OF GROUP M FORMATS: DETAILED MANPOWER DISPLAYS

FORMAT NUMBER*	TITLE	GENERAL FOCUS
M-1	LOGISTIC MANPOWER RESOURCES BY FUNCTION AND SUB-FUNCTIONS: TOTAL MILITARY END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84	Detailed data for the military manpower totals shown in Formats S-1 and S-2.
M-2	LOGISTIC MANPOWER RESOURCES BY FUNCTION AND SUB-FUNCTIONS: TOTAL ACTIVE DUTY MILITARY END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84	Separates active duty manpower from total manpower in Format M-1.
M-3	LOGISTIC MANPOWER RESOURCES BY FUNCTION AND SUB-FUNCTIONS: TOTAL RESERVE MILITARY END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84	Separates reserve manpower from total manpower in Format M-1.
M-4	LOGISTIC MANPOWER RESOURCES BY FUNCTION AND SUB-FUNCTIONS: TOTAL CIVILIAN END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84	Detailed data for the civilian manpower totals shown in Formats S-1 and S-2.

*This format numbering system is used to facilitate discussion of the formats. The prefix may not be required in the published LRA since each group of formats would be separated by tabs.

Separate formats display detailed data for specific manpower categories. Formats M-1, M-2, and M-3 provide detailed data for total, active, and reserve military manpower, respectively. Format M-4 provides detailed data for civilian manpower. All manpower, except for the military reserves, are identified as to whether it is assigned to a NIF or non-NIF activity.

F. GROUP W FORMATS: DISPLAYS OF LOGISTIC RESOURCES RELATED TO EQUIPMENT SUPPORTED

Formats in this group display logistic resources supporting Navy programs in terms of the equipment and, in some cases, weapon system supported. Based on guidance from OSD, resources in five of the nine basic functions are not routinely identified with equipment supported. In addition, for the remaining four categories, the specific sub-functions and level of detail at which equipment and resources are associated varies. This guidance is incorporated into the final set of formats included in this group.

In general, the final data base structure identifies only resources in the Maintenance, Material Support, Engineering Support, and Inactive Equipment Disposal, Storage and Maintenance functions to equipment supported. In designing formats to display these data, the approach is based on identifying the appropriate resources in each of these four functions first to material category, then to weapon system category within each material category, and finally to specific weapon systems or groups of weapon systems within each weapon system category.

Table 13 provides an overview of the functions to which resources are identified in terms of equipment and weapon system supported based on the approach described in the preceding paragraph. For each function, the level at which resources are identified to equipment is shown. Within the

Table 13. OVERVIEW OF LOGISTIC RESOURCES ASSOCIATED WITH THE EQUIPMENT SUPPORTED

Logistic Function/Sub-Function	Not Identified To Equipment	Identified To Material Category	Identified To Weapon System Category
Logistic Related Research and Development	X		
Maintenance		X	*
Material Support			
Investment in Support Hardware		Except war reserves	Except war reserves
Investment in MOD/ALT/Conversion Kits		X	*
Investment in Facilities and Equipment	X		
Supply Activities		Except depot level	Except depot level
Central ICP	X		
Central Procurement Operations	X		
Petroleum, Oil and Lubricants		X	Acft & ships only
Stock-Funded Material		X	Acft & ships only
Transportation	X		
Engineering Support		X	*
Inactive Equipment Disposal, Storage and Maintenance		X	
Logistic Headquarters Command and Administration	X		
Miscellaneous Logistic Support Activities	X		
Installation Support	X		

*Aircraft, ship and missile weapon systems only except torpedo depot level maintenance and investment for mod kits will be identified separately. (See Chapter II, Table 3.)

Material Support function, three major sub-functions (Investment in Facilities and Equipment, Central Inventory Control Points, and Central Procurement Operations) are not associated with equipment supported. The Inactive Equipment Disposal, Storage and Maintenance function is identified to material category only. Resources in the remaining sub-functions in Material Support and in the Maintenance and Engineering Support functions are identified to equipment at various levels as shown in the table.

Table 14 provides a partial list of the formats in Group W. The first format in the series, W-1, identifies resources in the Maintenance, Material Support, Engineering Support and Inactive Equipment Disposal, Storage and Maintenance functions in terms of the appropriate material category. A column is included for those major sub-functions in the Material Support function that are not identified to material category, so total dollars can be related to total dollars shown in earlier formats.

As shown by Figure 3, the remaining formats in Group W are divided into five subsets to cover the aircraft, ship, missile, expendable ordnance and munitions, and all other material categories. A series of six formats provide detailed data displays for each of these material category groupings. The first two formats identify the resources allocated to the material category in terms of support provided to Navy and non-Navy programs. The remaining four formats relate resources allocated to support of Navy programs to the appropriate weapon system categories for that material category. None of the basic series of six formats, however, relates resources to individual weapon systems. The use of formats for this purpose is discussed separately later in this section.

Because the general design of the series of six formats is basically the same, only the set of formats for the aircraft material category is discussed in detail to illustrate the

approach used to display resources in terms of equipment supported. For the remaining four material category groupings, only two formats are discussed to highlight the adjustments made in the basic formats for the individual material category groupings. All of these formats are listed in Table 14.

Also listed in Table 14 is a seventh format for the aircraft series. This format illustrates one feasible approach to displaying resources in terms of specific weapon systems. A complete discussion of alternative approaches to the routine display of resources by individual weapon systems is presented in Appendix D. This appendix concludes that the specific approach to be followed is dependent upon the number of individual systems in each material category for which OSD requires resources to be identified on an explicit basis. IDA does not attempt to select a specific list of systems, but presents criteria and an approach to follow in developing such lists. It is recommended that, prior to implementing the LRA, a joint OSD and Navy working group should review each Navy weapon system to determine the specific weapon systems and groups of systems to which resources are to be identified explicitly in the data base and in the formats. Once this is done, the specific formats to be used to display these data can be selected based on the numbers of systems designated by the working group.

The first two formats in the aircraft series, WA-1 at a summary level and WA-2 in detail, identify the resources allocated to the aircraft material category in Format W-1 in terms of support provided to Navy and non-Navy programs.

Format WA-3, the first format identifying resources in terms of weapon system categories, allocates the resources shown in Format W-1 by aircraft material category to the appropriate aircraft weapon systems categories. Once again, a column is provided for those resources that are routinely

Table 14. LIST OF GROUP W FORMATS: DISPLAYS OF LOGISTIC RESOURCES RELATED TO EQUIPMENT SUPPORTED

FORMAT NUMBER*	TITLE	GENERAL FOCUS
W-1	LOGISTIC RESOURCES ATTRIBUTABLE TO EQUIPMENT SUPPORTED BY SELECTED FUNCTION AND MAJOR SUB-FUNCTIONS: DOLLARS BY MATERIAL CATEGORY, FY 78-84	Identifies resources in the four functional categories that are to be routinely associated with the equipment supported to material category. A residual column is provided to display resources within the Material Support Function that are not to be routinely identified to material category so that dollars can be tracked to earlier formats (e.g., S-2 and DA-2). The remaining formats in this section are detailed displays of resources allocated to support of each of the material category groupings in this summary chart.
WA-1	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Separates the resources identified to the aircraft material category in Format W-1 into support of Navy and Non-Navy Programs; summary level. The other formats in this series provide detailed data for aircraft support resources.
WA-2	DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Expansion of the preceding format to display resources by detailed sub-functions.
WA-3	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, FY 78-84	Identifies the resources allocated to the aircraft material category in Format W-1 to aircraft weapon system categories; summary level. A residual column is provided for resources that are not to be routinely identified to specific aircraft categories so that dollars can be tracked to Format W-1.
WA-4	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT SPECIFIC FIGHTER AIRCRAFT WEAPON SYSTEMS, FY 78-84	Identifies the resources allocated to the Fighter Weapon System Category to the specific aircraft T/M or T/M/S prescribed by OSD for routine display. Similar formats would be used to routinely identify resources to specific aircraft in other categories.
WA-5	DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, FY 78-84	Expansion of Format WA-3 to display resources by detailed sub-functions.
WA-6	DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, TYPE OF FACILITY, FY 78-84	Expansion of preceding format to show organic/contract/interservice split.
WA-7	DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, MANPOWER, MATERIAL, "OTHER", AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78-84	Provides cost detail for the "organic" columns of the preceding format.
WB-1	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE SHIP MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Separates the resources identified to the ship material support category in Format W-1 into support of Navy and Non-Navy Programs; summary level. Other formats in this series, similar in design to the set of formats in the WA series except that work accomplished in SRF's is separately displayed in the last formats, provide detailed data for ship support. Only Format WB-3 is included to illustrate display of resources by ship weapon system categories.
WB-3	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE SHIP MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY SHIP WEAPON SYSTEMS CATEGORIES, FY 78-84	Identifies the resources allocated to the ship material category in Format W-1 to ship weapon system categories, summary level. A residual column is provided for resources that are not to be routinely identified to specific ship categories so that dollars can be tracked to Format W-1.

WA-2	DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, MANPOWER, MATERIAL, "OTHER", AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78-84	Provides cost detail for the "organic" columns of the preceding format.
WB-1	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE SHIP MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Separates the resources identified to the ship material support category in Format W-1 into support of Navy and Non-Navy Programs, summary level. Other formats in this series, similar in design to the set of formats in the WA series except that work accomplished in SRF's is separately displayed in the last formats, provide detailed data for ship support. Only Format WB-3 is included to illustrate display of resources by ship weapon system categories.
WB-3	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE SHIP MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY SHIP WEAPON SYSTEMS CATEGORIES, FY 78-84	Identifies the resources allocated to the ship material category in Format W-1 to ship weapon system categories, summary level. A residual column is provided for resources that are not to be routinely identified to specific ship categories so that dollars can be tracked to Format W-1.
WC-1	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE MISSILE MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Separates the resources allocated to the missile material category in Format W-1 into support of Navy and Non-Navy Programs. Other formats in this series, similar in design to the set of formats in the WA series, provide detailed data for missile support. Only Format WC-3 is included to illustrate display of resources by missile material category.
WC-3	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE MISSILE MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY MISSILE WEAPON SYSTEMS CATEGORIES, FY 78-84	Identifies the resources allocated to the missile category in Format W-1 to missile weapon systems categories.
WD-1	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE ORDNANCE AND MUNITIONS CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Separates the resources allocated to the Ordnance and Munitions material category in Format W-1 into support of Navy and Non-Navy Programs. Other formats in this series, similar in design to the set of formats in the WA series, provide detailed data for ordnance and munitions support. Only Format WD-3 is included to illustrate display of resources by ordnance and munitions material category.
WD-3	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE ORDNANCE AND MUNITIONS CATEGORIES BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY ORDNANCE AND MUNITIONS SYSTEMS CATEGORIES, FY 78-84	Identifies the resources allocated to the Ordnance and Munitions category in Format W-1 to Ordnance and Munitions systems categories.
WE-1	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE "ALL OTHER" MATERIAL CATEGORY BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84	Separates the resources allocated to the "All Other" material category in Format W-1 into support of Navy and Non-Navy Programs. Other formats in this series, similar in design to the set of formats in the WA series, provide detailed data for "All Other" support. Only Format WE-3 is included to illustrate display of resources by "All Other" material category.
WE-3	LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE "ALL OTHER" CATEGORIES BY SELECTED FUNCTION AND SUB-FUNCTIONS: DOLLARS BY "ALL OTHER" CATEGORIES, FY 78-84	Identifies the resources allocated to the "All Other" category in Format W-1 to "All Other" category in Format W-1 to "All Other" systems categories.

*This format numbering system is used to facilitate discussion of the formats. The prefix may not be required in the published LRA since each group of formats would be separated by tabs.

identified to the aircraft material category but not to specific weapon systems categories. This ensures that resources displayed are related to information on earlier formats. Format WA-4 uses the Fighter Weapon Systems Category to illustrate one feasible approach to displaying resources for specific aircraft by T/M or T/M/S. Depending upon the number of specific aircraft to be displayed, a separate series of formats can be provided for each weapon system category or the data can be incorporated into the preceding format. These alternative approaches are discussed in Appendix D.

The remaining formats in the aircraft series provide detailed data from Format WA-3. Format WA-5 expands Format WA-3 to provide detailed sub-function data. Format WA-6 provides detail by the type of facility providing the logistic support, while Format WA-7 separates the cost of logistic support provided by Navy facilities into manpower, material and other cost categories.

Formats in the WB series provide similar detail for the resources identified to the ship material category in Format W-1. Format WB-1 identifies total resources allocated to the ship material category in Format W-1 in terms of support of Navy and non-Navy programs, just as Format WA-1 did for aircraft support. Format WB-1 illustrates how the sub-functions can be adjusted to display resources for ship support. Format WB-3, the counterpart to Format WA-3, illustrates use of ship weapon systems categories. All of the remaining formats in the ship series have the same relationship to their counterparts for aircraft support, except that Formats WB-6 and WB-7 separately identify resources allocated to the operation of the depot-level Ship Repair Facilities for which there is no aircraft counterpart.[1]

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[1]Even though not described in detail in this chapter, all six ship formats are included in Appendix C.

Formats in the WC, WD, and WE series provide similar supporting data for the total resources identified in Format W-1 to the missile, expendable ordnance and munitions, and all other material categories. In general, except for adjusting sub-function detail and system categories, these formats are similar to their counterparts described for the aircraft series.

G. SUMMARY

The final set of formats selected to comprise the initial LRA results from the design and evaluation of a large number of formats considered during Phases I and II of this study. Based on the assumption that the Navy builds and maintains the detailed data base required to support the entire data base structure, and thus is able to respond rapidly to requests for follow-on data, the formats represent a minimum set of data to be provided routinely by the Navy.

The formats also represent an initial concept for an LRA and provide the basis for revising the recommended set of formats and adding new ones as experience is accumulated in implementing the LRA concept. Chapter IV discusses specific areas of concern that must be addressed in implementing the initial LRA.

Finally, the formats presented in this study are designed to provide the basis for expanded coverage of information related to the Navy's allocation of its total resources to logistic support. For example, the final data base structure and recommended formats do not provide for logistic program data such as the number of direct mandays required for specific maintenance programs. It is expected that once the initial LRA concept is implemented, this kind of information, some of which is readily available in Navy data systems, will be incorporated into the LRA. Chapter V discusses several subjects related to long-range improvements in the IDA proposed initial LRA.

Chapter IV

IMPLEMENTATION OF THE LOGISTIC RESOURCE ANNEX

A. INTRODUCTION

In previous chapters of this study, the final IDA logistic data base structure and the recommended set of formats that will comprise the LRA were developed. This chapter discusses several issues that must be resolved before the Navy can fulfill requirements to produce an LRA. Most of these issues are administrative in nature. They do not affect IDA's concept of a logistic resource annex, but are critical to the successful implementation of this new system for displaying logistic resources.

B. IMPLEMENTATION

This section presents and discusses the list of important implementation issues. This discussion identifies potential problem areas and offers possible alternative solutions to these administrative problems. These issues are:

- When should the set of formats comprising the LRA be initially submitted by the Navy to OSD and how often should the LRA be updated? Should OSD require that an LRA accompany each FYDP Update but provide more time for its preparation (either by providing for a later LRA submission or by extending the time allotted to the Navy for the entire FYDP Update, but with simultaneous submission of all annexes)?
- Should OSD have direct access to the LRA data bank?
- Should the LRA reflect the same level of aggregation of data for each fiscal year in the final structure and each logistic program area (e.g., Direct Navy,

Naval Reserves, Security Assistance) within a given functional category?

- What are the weapon systems for which resources are to be identified explicitly in the LRA data base? Of these, which are to be displayed routinely in the LRA?
- Should the Navy align its existing historical FYDP data base to be consistent with newly established information elements in the final structure?
- When changes or modifications are made in the Navy programming system to accommodate final LRA information elements, should these changes also be incorporated into the Navy budgeting and accounting systems?

1. Data for Initial LRA and Frequency of Update

As a result of our Phase I analysis, we concluded that existing and planned Navy Data Systems, with minor modifications to the NCIS/FYDP subsystem and extensive use of proration techniques, are capable of providing most of the LRA information elements by October 1976 (the date by which OSD has directed the Navy to implement the depot level maintenance data collection system required by DODI 4151.15). Based on this conclusion, we postulate that the Navy should be able to produce an initial LRA early in a selected POM cycle. We do not intend to suggest that the capabilities of Navy data systems to produce information elements are the sole consideration in establishing the target data for submission of the initial LRA.

A major consideration in selecting the target date for submission of the initial LRA is the administrative lead-time required for OSD and the Navy to develop the detailed guidance required to implement what is a major change in DoD PPBS. Based on this consideration alone, January 1978 (the submission data for the FY-79 Congressional Budget Submission) probably represents the earliest reasonable target data for the initial LRA. If this is the target for implementation, the LRA requirements should be incorporated into the guidance provided at the

start of the planning cycle. Then, the Navy can begin to plan and program future resources in accordance with the new procedures, avoiding a redistribution of resources into new categories on an after-the-fact basis. For example, if the initial LRA is required for the *January 1978 FYDP Update*, the initial guidance should accompany the POM-79 Guidance Package since this represents the first step in the planning process for the applicable *January 1978 FYDP Update*.

The Navy has experienced difficulty in providing detailed data to periodically update the NCIS/FYDP Subsystem because insufficient time is available for the claimants to provide the required inputs. The new LRA requires even more extensive claimant participation to update the LRA data base than is required for current NCIS/FYDP updates. In addition, based on the current LRA concept, an LRA update is required on a recurring basis following each FYDP update.

OASD/I&L must explore alternatives with the Navy that will help to reduce the Navy's administrative workload in producing LRA updates while, at the same time, assuring that timely, reliable data are available to OSD. For example, it might be feasible to allow the Navy to submit the LRA from one to three weeks after the FYDP update. This would provide the Navy additional administrative time to compile the detailed logistic information required to produce the LRA without detracting from the quality of the PPBS actions associated with each FYDP update. Another alternative that might help reduce the Navy's administrative workload would be to require the Navy to update the LRA data base at all levels and to produce a detailed LRA only once each year (e.g., to support the Navy's POM Submission). At other times during the annual PPBS process, the LRA data base could be updated only at the function and key sub-function levels. An abbreviated LRA, reflecting these summary level changes, could be published to provide visibility of program decisions made at other times during the PPBS cycle.

2. The LRA Data Bank

The IDA LRA concept requires the Navy to maintain a central data bank (i.e., the logistic data base structure and associated information elements) that could be used not only to produce the LRA displays but also to provide data at a lower level of detail in response to specific OSD requests. We did not address the issue of whether OSD should have the capability to directly and independently gain access to these data.

The final structure, presented in Chapter II, contains significantly less detailed data than the ideal structure presented in our P-1194 Paper. Although the Director of Defense Planning and Evaluation (DDP&E) has a Multics Automatic Data Processing System readily available to the OSD staff, our study does not envision that the complete logistic data base would be routinely submitted to OSD. The lower level of detailed data supporting the LRA would remain at the Navy level. This is based on the principles followed in selecting the final set of LRA formats, presented in Chapter III.

- All formats are prepared with the assumption that the Navy creates and maintains the detailed data base required to support the complete data base structure prescribed in Chapter II. Thus, even though the formats might not require the routine submission of specific data available in the final logistic data base structure, the Navy will have the capability to respond within a reasonable period of time to follow-on requests for data that might be generated by the initial LRA analysis.
- The number of displays and level of detail to be generated on a routine basis should be limited to those data that would be most useful to OSD and DON staff agencies to monitor trends in the allocation of logistic resources, without either causing an unduly heavy workload on the Navy or overwhelming users of the LRA with detailed information.

- The LRA must provide sufficient detailed information for each logistic function to permit LRA users to identify gross resource allocations and trends in areas of recurring interest, extract pertinent information and create new displays for specific areas of interest. This general approach, which stresses flexibility in the use of data, is based on the assumption that LRA users have a thorough knowledge of the data base structure that supports each display described in Chapter III.

We realize there will be occasions when the data displayed in the LRA formats will not satisfy all of OSD's data requirements. The IDA final structure concept permits the Navy to respond to specific requests for data within a reasonable period of time.

3. Levels of Aggregation and Data

The IDA final logistic data base structure and associated LRA formats require that the same levels of aggregation of data be shown for each fiscal year in the data base structure. These requirements are based on our assessment of the needs of OASD/I&L for logistic data in managing and evaluating logistic support resources and the ability of Navy data systems to provide the final structure information elements. A study by data users at the OSD and DON levels might reveal that the same levels of detail are not required for all years. The time and effort required to produce the same level of detail for all years may be considered unjustified for some OSD logistic planning and management purposes. For example, within the Maintenance function, it may be feasible to limit the identification of resources to material category for the later years. In addition, it may not be necessary to identify resources to each of the customer categories contained in the data base (e.g., Navy and non-Navy versus Direct Navy, Security Assistance, Interservice for the Navy, et al.). We are not advocating reducing the amount of detail but we believe that decisions of

this kind (on levels of aggregation of data) must be made by OSD and DON analysts. These decisions can be formalized as specific directives to implement the Logistic Resource Annex.

4. [illegible]cn of Logistic Resources to Weapon Systems

The [illegible]mats present summary displays of resources in terms of weapon systems supported by material category and logistic function. Based on guidance from OASD/I&L, these summary formats display resources in terms of aggregated weapon system categories (e.g., fighters, attack, helicopters, cruisers, aircraft carriers, submarines). Resources are not displayed routinely by individual weapon systems within the various aggregate weapon systems categories, but the Navy should maintain a capability to selectively show logistic resources in terms of specific weapon systems. In this regard, there are other courses of action that can be pursued by OASD/I&L. For example, resources could be displayed on a recurring basis in terms of selected individual weapon systems (e.g., aircraft in terms of T/M and T/M/S and ships by class) and a residual category identified within each Navy weapon system category (e.g., attack, fighter, cargo aircraft).

These alternatives assume that OASD/I&L establishes a list of selected weapon systems and weapon systems groupings for which the Navy includes recurring data in its central logistic data bank on logistic resources directly attributable to these weapon systems or groupings. Even though logistic resources might not be displayed in terms of specific weapon systems routinely on LRA formats, the Navy will be able to respond to follow-on requests resulting from initial LRA analyses. In addition, OASD/I&L must provide a set of guidelines (e.g., major Navy procurement program, significant item in the active inventory, etc.) that are identified in terms of these selected weapon systems in their central logistic data bank.

5. Historical Logistic Information Elements

Our preliminary analysis indicates that significant problems may be encountered in aligning the historical DNFYP data to make it consistent with the newly established LRA logistic information elements. It appears that the primary OASD/I&L interest with regard to the LRA is in programming logistic data displays that are not currently available on a recurring basis. For this reason, the realignment of the historical FYDP data should be accorded a lower priority in the LRA implementation process.

6. Changes in Navy Accounting and Budgeting Systems Accompanying Changes in Navy Programming Systems

When the Navy implements the final logistic data base structure described in Chapter II, it will be necessary to develop some programming data (i.e., logistic information elements) that are currently not produced on a recurring basis by Navy data systems. Although the emphasis of the FYDP is on the programming of resources, analyses of trends in the allocation of logistic resources dictate that there be consistency in data definitions and displays throughout the PPBS process. Therefore, as changes are made in the programming of resources, complementary changes should be made in systems relating to the budgeting and accounting for consumption of these resources. This policy will assure that, over time, there are consistencies in definitions and displays of all logistic resource data: historical, budget, program, and longer range planning information. IDA recommends that OASD/I&L place greater priority on establishing these procedures than on realigning all existing historical FYDP data to be consistent with the new LRA definitions and formats.

7. Coding System for the Final Structure Logistic Information Elements

To enhance and ensure the usefulness and flexibility of the IDA final data structure and the LRA in the DoD PPBS process, a relatively high priority in the implementation phase must be given to the development of a system to code all information elements required by the LRA data base structure. This coding system should relate Navy logistic resources expressed in terms of logistic functions, sub-functions, and weapon systems supported, to the FYDP. Specifically, the coding system should be devised to relate these resources to that portion of the FYDP (e.g., major FYDP program, program element, FYDP cost categories, appropriations) from which they were derived.

The preferred coding system is highly dependent on the data systems used by the Navy to produce the LRA. Both the NCIS/FYDP Subsystem and the NARM already have the capabilities to identify information elements in terms of the categories listed in the previous paragraph. For this reason, use of these systems would facilitate coding logistic resources in terms of the LRA data base structure without creating a new data system.

Chapter V

RECOMMENDATIONS FOR LONG-RANGE IMPROVEMENTS TO THE PROPOSED LRA

IDA believes that the basic LRA concept can be expanded to provide improved visibility and management of DoD logistic support resources. This chapter identifies some of the subjects that should be studied if such an expansion is considered desirable.

A. INTRODUCTION

In developing an initial LRA concept, IDA concentrated on providing improved visibility of logistic resources based on the methodology and procedures currently used by the Navy to allocate its resources. In general, this approach involves extracting logistic resources from the appropriate program elements and displaying them, primarily on the basis of logistic function performed, on a set of formats that comprises an LRA. Although this concept is quite straightforward, the LRA represents a significant addition to the DoD PPB system by providing improved OSD visibility of Navy logistic resource applications.

Because the LRA represents a major change to current PPBS procedures, IDA limited coverage in the initial LRA to displaying only dollar and manpower data. Once improved visibility of logistic support resource allocation is achieved (based on the functions performed and the equipment supported), a valid basis should be available to improve both the resource allocation process and the efficiency and effectiveness of logistic support programs.

B. SUBJECTS TO CONSIDER TO PROMOTE LONG-RANGE IMPROVEMENTS

1. Addition of Program Data

One of the first follow-on efforts recommended for the LRA is the expansion of the data base structure to include program data to substantiate the Navy's allocation of logistic resources. In some cases, data already exist in the Navy that can fulfill this requirement. In other cases, workload measures have to be developed that reflect the Navy's basis for allocation without requiring excessive detail. Later in this chapter, some examples are presented to illustrate the kind of data required.

A prime area in which improved program data and displays are required is the relationship between producer and customer resources involved in the operation of NIF activities and interservice support programs. Currently, the programmed claimant funds that purchase goods and services are not easily equated to the goods and services programmed by each NIF activity.

2. Program Element Structure

The OASD/PA&E task order required IDA to emphasize the development of the LRA data base structure rather than the identification of needed changes in current FYDP program element definitions. In the course of the study, however, several areas were encountered in which changes to the program element structure would provide improved visibility into the Navy's allocation of logistic resources to support approved programs. For example, the Navy uses different methods of displaying customer funds for ship and aircraft depot maintenance despite the fact that resources for both programs are to a large extent centrally programmed and managed. Customer funds for aircraft depot maintenance are consolidated in support program elements but funds for ship depot maintenance are distributed to the program elements to which the ships are assigned. IDA

did not attempt to evaluate which methodology is more appropriate, but the use of two different approaches may create difficulty in comparing total weapon system costs unless the appropriate adjustments are made for depot maintenance.

The current program element structure should be analyzed to identify possible changes that can increase visibility of the allocation and management of total Navy logistic resources. To facilitate comparisons among the Services, definitions and approaches used in allocating logistic support resources among comparable program elements should be refined and standardized to the extent practicable.

3. Improved Management Tool

As pointed out earlier, the initial LRA focusses on providing improved displays of the allocation of Navy resources for the logistic support of approved programs. Many changes can be incorporated in the long run to improve its usefulness as a PPBS management tool. For example, possible improvements include changes which:

(a) provide the capability to display logistic resources related to defense issues; i.e., relate changes in the allocation of resources to specific program decisions. The changes identified would be limited to major topics, perhaps involving resources above an established threshold and limited to those that result from program decisions rather than general changes that impact broad areas (e.g., pay raises or adjustment for inflation);

(b) incorporate cost factors in the LRA that could be agreed-upon bases for appropriate analysts to make gross estimates of the impact of force adjustments on the allocations of logistic resources. These factors could be patterned after the factors currently published for the first program year in the NARM POM documentation;

(c) incorporate alternative resource allocations for designated issues, either on a total or marginal basis;

(d) incorporate comments to support key issues so the LRA becomes a decision-oriented document similar to Annex D of the Navy POM.

4. Use of Sampling Techniques

The feasibility of using sampling techniques to develop the lowest level of detail required to support the Navy's allocation of logistic resources should be explored as an alternative to current systems that attempt to capture all data at the point of origin. For example, the 3M System collects detailed data on each maintenance action performed by technicians assigned to the intermediate and organization levels. These data are recorded for selected equipment at the time each action is completed. The use of sampling techniques may offer a less expensive option to obtain improved data reliability.

5. Revised Budget Exhibits

The feasibility of revising current Congressional Budget Exhibits consistent with proposed LRA formats should be explored as an alternative to requiring two sets of records to support logistic planning during the PPBS cycle. It should be possible to realign the Budget Exhibits to incorporate detail by logistic function and sub-function performed and still provide Congress sufficient back-up data to support the budget and apportionment reviews. The formats developed for the three year time period currently covered by the budget exhibits should be used for all years to ensure that logistic resources are programmed on a consistent basis over the entire time period covered by the FYDP. This standardization should be accomplished independent of the question of how many years of data should actually be submitted to Congress to support the budget reviews.

C. SAMPLES OF ADDITIONAL PROGRAM DATA TO BE INCORPORATED INTO AN LRA

This section presents several formats to illustrate specific issues involved in incorporating some of the improvements discussed in the preceding section.

1. NIF Activity Program Data

One of the significant deficiencies in current PPBS documentation is the lack of routine displays of information that relate resources programmed by industrially-funded activities to the funds programmed by customers to purchase the goods and services provided by the producer activities. This information is of vital importance, since a major consideration in the cost of operating activities under the NIF concept is the extent to which employment levels in the producer activity are consistent with the workloads generated and funded by its projected customers. Since employment levels are programmed well in advance of program implementation and are not rapidly adjusted in response to short-term fluctuations in actual workload, failure to achieve projected workloads generally results in higher costs for the work that is assigned.

Figure 4 is a generalized format that illustrates one approach to developing a format to display producer-customer resources. A separate format, tailored to the unique requirements of the various kinds of NIF activities, could be prepared for each NIF activity (e.g., individual NARF's, shipyards and SRF's,[1] Ordnance Facilities). Appropriate summary displays could also be developed.

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[1]Ship Repair Facilities, although operated under a modified NIF concept, should be included since they perform a significant part of ship depot maintenance.

Program Data	FY-78	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84
Producer Resources (Industrial Activity)							
Total Direct Labor Available (Mandays)							
Total Manpower (Manpower Ceiling)							
Cost Per Direct Manday/Manhour							
Total Projected Costs							
Projected Revenues							
Navy Claimants (List)							
Other Claimants (List)							
Total Projected Revenues							
Customer Funds							
Navy Claimant by Program Element (List)							
All Other Customers (List)							
Total Programmed Customer Funds							

Figure 4. SAMPLE FORMAT: NIF ACTIVITY PROGRAM DATA

2. Organization and Intermediate Level Maintenance Program Data

The formats that comprise the basic LRA include several that require the Navy to display manpower and dollars allocated to organization and intermediate level maintenance. Additional formats should be developed, however, to relate these resources to various program data. Figure 5 uses the ship material category to illustrate one approach to combining program data with the dollar and manpower resources displayed in the LRA. Separate formats could be developed for each ship weapon system category (e.g., carriers, cruisers). Other summary and detailed displays could be used to improve visibility of these resources in terms of sub-functions and weapon system and equipment supported. The specific data displayed and the design of the formats would vary with the area covered by the format. Generally, all program data are available in current Navy information systems, although extensive analyses are required to identify the best approach to incorporating information elements into the data base structure.

3. Depot Level Maintenance Program Data

Another area in which program data must be combined with the data already required by the LRA formats is depot maintenance. Figure 6 uses ship depot maintenance to illustrate one approach to achieving improved visibility of total depot maintenance logistic resources. Since most of the dollar data are already displayed in LRA formats, formats similar to Figure 6 would be used to supplement the basic LRA. Note also that these formats include some of the data that would be incorporated into the NIF formats discussed earlier in this section. Different aspects of the overall problem of allocating logistic resources are emphasized so formats similar to both Figures 4 and 6 will prove useful.

Program Data	FY-78	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84
Organization Level Maintenance Activities							
Manpower (End-Strength)							
Total Billets Required by SMD							
Total Billets Authorized							
Total Projected Manning							
Costs (Dollars)							
Personnel							
Material (OPTAR Fund for Repair Parts)							
Total Maintenance							
Intermediate Level Maintenance Activities							
Manpower							
Total Direct Manhours							
Total Billets Required by SMD							
Total Billets Authorized							
Total Projected Manning							
Costs (Dollars)							
Personnel							
Material (ROV Funds)							
Total Maintenance							
Intermediate Level Customer Funds							
Navy Claimants by Program Element (List)							

Figure 5. SAMPLE FORMAT: ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE SUPPORT, SHIPS AND ASSOCIATED END-ITEMS

Program Data	FY-78	→	FY-84
Customer Data Total Projected Shipwork (Direct Mandays) ROH RA/TA FMP Other Total Total Programmed Funds (Dollars) FLEET NAVSEA Total Overhaul Program Summary # Ships Overhauled # Ships in Bow Wave			
Shipyard Data Naval Shipyards Total Projected Shipwork (Direct Mandays) Total Projected Manpower Available (Mandays) Total Cost Per Direct Manday Total Projected Costs Total Projected Revenues Private Shipyards Total Projected Shipwork (Direct Mandays) Total Projected Manpower Available (Mandays) Total Cost Per Direct Manday Total Cost			
SUPSHIP Support Projected Workload to Support Depot Maintenance (Mandays) % of Total Assigned Manpower % of Total Operating Budget			

Figure 6. SHIP DEPOT MAINTENANCE SUMMARY, WEAPON SYSTEM CATEGORY

Figure 6 illustrates the kind of program data that might be incorporated into a summary level format for ship depot maintenance. This format provides an overview of customer, naval shipyard, private shipyard, SUPSHIP, and total program data. Separate summary formats are required for each ship weapon system category. In addition, appropriate back-up charts are required to provide detailed data for each of the highly aggregated information elements shown in Figure 6.

The line items displayed in Figure 6 are selected to illustrate several categories of program data that can improve visibility of ship depot maintenance. Extensive analyses are required to select specific information elements and to design formats to display resource and program data. For example, the SUPSHIP line is intended to show only the portion of total SUPSHIP resources consumed in support of depot maintenance. Practically speaking, however, it may not be possible to identify SUPSHIP resources specifically to new construction and depot maintenance support except on the basis of proration techniques. Nevertheless, since SUPSHIP support is a vital part of the total ship maintenance program, this cost should be separately identified.

APPENDIX A

THE IDA FINAL LOGISTIC DATA BASE STRUCTURE (DETAIL)

THE IDA FINAL LOGISTIC DATA BASE STRUCTURE (DETAIL)

This appendix presents a detailed outline of the data base matrix rows and columns that assign resources to logistic functions and sub-functions in the IDA final logistic data base structure. It supplements the narrative presentation of the final structure in Chapter II. Footnotes at the end of the appendix explain the resources included in unique matrix rows and columns.

FY___	
Dollars	Manpower[2]

(As Applicable)

A. LOGISTIC-RELATED RESEARCH AND DEVELOPMENT[1]

1. Reliability and Maintainability of Equipment
2. Operational Resupply Techniques
3. Pollution Abatement
4. Energy Conservation
5. All Other Logistic Related Projects

FY___									
Organic				Contract		Total			
Direct Navy[3]		Naval Reserves[4]		Direct Navy[3]	Naval Reserves[4]	Direct Navy[3]		Naval Reserves[4]	
Dollars	Manpower[5]	Dollars	Manpower[5]	Dollars	Dollars	Dollars	Manpower[5]	Dollars	Manpower[5]

(As Applicable)

B. MAINTENANCE

1. Organization Level[6,7]

   a. Aircraft and Associated End Items[8]
   b. Ships and Associated End Items[8]
   c. Missiles[8]
   d. Construction/Automotive Equipment
   e. Electronic and Communication Systems
   f. Expendable Ordnance and Munitions
   q. All Other Equipment

2. Intermediate Level[9]

   a. Aircraft and Associated End Items[8]

      (1) Airframe

         (a) Maintenance and Repair
         (b) Modification
         (c) Other

      (2) Engine Maintenance and Repair
      (3) Component and Accessories Maintenance and Repair
      (4) Other Equipment Maintenance and Repair

   b. Ships and Associated End Items[8]

      (1) Hull/Structure

         (a) Maintenance and Repairs
         (b) Alteration (Installation)
         (c) Restricted Availability/Technical Availability
         (d) Other

      (2) Propulsion Plant

         (a) Maintenance and Repair
         (b) Alteration (Installation)
         (c) Restricted Availability/Technical Availability
         (d) Other

      (3) Other Equipment

         (a) Maintenance and Repair
         (b) Alteration (Installation)
         (c) Restricted Availability/Technical Availability

   c. Missiles[8]

      (1) Maintenance and Repair
      (2) Modification (Installation)
      (3) Other

   d. Construction/Automotive Equipment[10]

   e. Electronic and Communications Systems[10]

   f. Expendable Ordnance and Munitions

   g. All Other Equipment[10]

FY___							
Direct Navy[3]		Naval Reserves[4]		Security Assistance-(FMS)		Security Assistance-(MAP)	
Dollars	Manpower	Dollars	Manpower	Dollars	Manpower	Dollars	Manpower

(As Applicable)

C. MATERIAL SUPPORT[16]

1. Investment in Logistic Support Hardware - Value[17]
   - a. Initial Spares[8]
     - (1) Peculiar
     - (2) Common
   - b. Replenishment Spares[8]
     - (1) Peculiar
     - (2) Common
   - c. War Reserve Stocks
     - (1) Peculiar Spares
     - (2) Common Spares
     - (3) Munitions
   - d. Support Equipment and Data[8]
2. Investment in Modification/Alteration/Conversion Kits - Value[8]
   - a. Aircraft Modifications[8]
     - (1) Operational Safety Improvement
     - (2) Service Life Extension
     - (3) Conversion in Lieu of Procurement
   - b. Fleet Modernization Program[8]
     - (1) Ship Alterations
       - (a) Technical Improvement Program
       - (b) Military Improvement Program
     - (2) Ordnance Alterations
       - (a) Technical Improvement Program
       - (b) Military Improvement Program
   - c. Missile Modifications[8]
     - (1) Operational Safety Improvement
     - (2) Improved Operational Capability
   - d. Torpedo Modifications[8]
     - (1) Operational Safety Improvement
     - (2) Improved Operational Capability
   - e. All Other Modifications[8]
   - f. Ship Conversions[8]
3. Investment in Material Support Facilities and Equipment - Value[17]
   - a. Organization Level
     - (1) Equipment
     - (2) Facilities
   - b. Intermediate Level
     - (1) Equipment
     - (2) Facilities
   - c. Depot Level
     - (1) Equipment
     - (2) Facilities
4. Supply Activities
   - a. Organization Level[8]
   - b. Intermediate Level[8]
     - (1) Land-Based Overseas Supply Depots
       - (a) Storage and Warehousing
       - (b) Stock Control
       - (c) Overall Support
     - (2) Sea-Based
       - (a) Storage and Warehousing
       - (b) Stock Control
   - c. Depot Level[18]
     - (1) Storage and Warehousing
     - (2) Traffic Management
     - (3) Overall Support

(1) Equipment
(2) Facilities

c. Depot Level
(1) Equipment
(2) Facilities

4. Supply Activities

a. Organization Level[8]
b. Intermediate Level[8]
(1) Land-Based Overseas Supply Depots
(a) Storage and Warehousing
(b) Stock Control
(c) Overall Support
(2) Sea-Based
(a) Storage and Warehousing
(b) Stock Control
c. Depot Level[18]
(1) Storage and Warehousing
(2) Traffic Management
(3) Overall Support

5. Central Inventory Control Point Operations

a. Stock Control
b. Cataloging
c. Item Management
d. Support Services

6. Central Procurement Operations
a. Procurement Operations
b. Contract Administration

7. Petroleum, Oil and Lubricants - Value
a. Aircraft[8]
b. Ships[8]
c. All Other Equipment

8. Stock-Funded Material (Non-ADD) - Value
a. Aircraft[8]
b. Ships[8]
c. All Other Equipment

D. TRANSPORTATION[19]

1. Investment in Transportation Related Facilities and Equipment - Value[17]

a. Equipment
b. Facilities

2. Second Destination Transportation - Value

a. Sealift (MSC)
b. Airlift (MAC)
c. Commercial Carrier

3. Base Transportation[20]

FY ___																				
Organic							Contract					Ship Repair Facilities								
Direct Navy (Dollars)	Interservice By Navy (Dollars)	Security Assistance-(FMS) (Dollars)	Security Assistance-(MAP) (Dollars)	All Other (Dollars)[11]	Total Manpower End-Strengths[5]	Direct Navy (Dollars)	Interservice By Navy (Dollars)	Security Assistance-(FMS) (Dollars)	Security Assistance-(MAP) (Dollars)	All Other (Dollars)[11]	Direct Navy (Dollars)	Security Assistance-(FMS) (Dollars)	Security Assistance-(MAP) (Dollars)	All Other (Dollars)[11]	Total Manpower End-Strengths[5]	Interservice For Navy (Dollars)

(As Applicable)

D. TRANSPORTATION[19] (cont'd)

3. Depot Level[12]

a. Aircraft and Associated End Items[8]

(1) Airframe
(a) Maintenance and Repair
(b) Modification
1. Installation
2. Kit Costs (Non-ADD)
(c) Other

(2) Engine
(a) Maintenance and Repair
(b) Modification
1. Installation
2. Kit Costs (Non-ADD)
(c) Other

(3) Components and Accessories
(a) Maintenance and Repair
(b) Modification
1. Installation
2. Kit Costs (Non-ADD)
(c) Other

(4) Other Equipment
(a) Maintenance and Repair
(b) Other

b. Ships and Associated End Items[8]

(1) Hull/Structure
(a) Maintenance and Repair
(b) Alteration/Conversion
1. Installation
2. Kit Costs (Non-ADD)
(c) Restricted Availability/Technical Availability
(d) Other

(2) Propulsion Plants
(a) Maintenance and Repair
(b) Alteration/Conversion
1. Installation
2. Kit Costs (Non-ADD)
(c) Restricted Availability/Technical Availability
(d) Other[13]

(3) Other Equipment
(a) Maintenance and Repair
(b) Alteration/Conversion
1. Installation
2. Kit Costs (Non-ADD)
(c) Restricted Availability/Technical Availability
(d) Other

c. Missiles[8]

(1) Maintenance and Repair

(2) Modification
(a) Installation
(b) Kit Costs (Non-ADD)

(3) Other

d. Construction/Automotive Equipment

(1) Maintenance and Repair

(2) Other

e. Electronic and Communication Systems

(1) Maintenance and Repair

(2) Modification
(a) Installation
(b) Kit Costs (Non-ADD)

(3) Other

f. Expendable Ordnance and Munitions

(1) Ammunition Maintenance and Repair

b. **Ships and Associated End Items**[9]

(1) Hull/Structure
(a) Maintenance and Repair
(b) Alteration/Conversion
1. Installation
2. Kit Costs (Non-ADD)
(c) Restricted Availability/Technical Availability
(d) Other

(2) Propulsion Plants
(a) Maintenance and Repair
(b) Alteration/Conversion
1. Installation
2. Kit Costs (Non-ADD)
(c) Restricted Availability/Technical Availability
(d) Other[13]

(3) Other Equipment
(a) Maintenance and Repair
(b) Alteration/Conversion
1. Installation
2. Kit Costs (Non-ADD)
(c) Restricted Availability/Technical Availability
(d) Other

c. Missiles[9]

(1) Maintenance and Repair

(2) Modification
(a) Installation
(b) Kit Costs (Non-ADD)

(3) Other

d. Construction/Automotive Equipment

(1) Maintenance and Repair

(2) Other

e. Electronic and Communication Systems

(1) Maintenance and Repair

(2) Modification
(a) Installation
(b) Kit Costs (Non-ADD)

(3) Other

f. Expendable Ordnance and Munitions

(1) Ammunition Maintenance and Repair

(2) Torpedoes[9]
(a) Maintenance and Repair
(b) Modification
1. Installation
2. Kit Costs (Non-ADD)

(3) Mines/Depth Charges Maintenance and Repair

(4) Bombs Maintenance and Repair

(5) All Other Expendable Ordnance and Munitions Maintenance and Repair

g. All Other Equipment Maintenance and Repair

h. Other Depot Maintenance Activities
(1) Manufacture and Assembly[14]
(2) Other Depot Maintenance Workload

4. Investment in Maintenance Related Facilities and Equipment-Value[15]

a. Organization Level
(1) Equipment
(2) Facilities

b. Intermediate Level
(1) Equipment
(2) Facilities

c. Depot Level
(1) Equipment
(2) Facilities

FY___																							
Direct Navy[3]							Security Assistance (FMS)							Security Assistance (MAP)									
Dollars				Manpower[22]			Dollars				Manpower[22]			Dollars				Manpower[22]					
Organic NIF	Organic NON-NIF	Contract	Total	NIF	NON-NIF	Total	Organic NIF	Organic NON-NIF	Contract	Total	NIF	NON-NIF	Total	Organic NIF	Organic NON-NIF	Contract	Total	NIF	NON-NIF	Total			

(As Applicable)

E. ENGINEERING SUPPORT[21](Includes Technical Assistance)

1. Aircraft[8]
2. Ships[8]
3. Missiles[8]
4. Expendable Ordnance and Munitions
5. All Other Equipment

FY___					
Direct Navy[3]		Security Assistance - (FMS)		Security Assistance - (MAP)	
Dollars	Manpower[2]	Dollars	Manpower[2]	Dollars	Manpower[2]

(As Applicable)

F. INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE[2 3]

1. Aircraft
2. Ships
3. Missiles
4. Expendable Ordnance and Munitions
5. All Other Equipment

G. LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION

1. NAVMAT[2 4]
2. NAVAIR[2 5]
3. NAVSEA
4. NAVELEX
5. NAVFAC
6. NAVSUP
7. SSPO

FY__	
Dollars	Manpower[2]

(As Applicable)

H. MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES

1. Naval Petroleum Reserves
   a. Administration
   b. Development Engineering
2. Industrial Preparedness
   a. Planning
   b. Industrial Base Support
3. Printing Plants and Laundries
4. Central Logistic Training Activities[26]
5. All Other Activities[27]

	FY___															
	Direct Navy Support[3]				Naval Reserve Support[4]				Family Housing Support				Interservice Support By Navy			
	Dollars		Manpower[29]		Dollars		Manpower[29]		Dollars		Manpower[29]		Dollars		Manpower[29]	
	NIF[30]	NON-NIF	NIF[30]	NON-NIF	NIF[30]	NON-NIF	NIF[30]	NON-NIF	NIF[30]	NON-NIF	NIF[30]	NON-NIF	NIF[30]	NON-NIF	NIF[30]	NON-NIF
I. INSTALLATION SUPPORT																
1. Investment in Installation Support Facilities and Equipment - Value [15,28]																
a. Equipment																
b. Facilities																
2. Command and Administration																
3. Real Property Maintenance Activities[31]																
a. Maintenance and Repair of Real Property																
b. Operation of Utilities																
c. All Other Activities[32]																
4. Base Services																
a. Base Maintenance																
b. Base Supply																
c. Base Transportation (Non-ADD)																
d. Medical and Dental Clinics																
e. All Other Services																
5. Base Communications																
6. Support R&D Appropriation Financed Activities																

[1]The maintenance associated with RDT&E ships and aircraft will be reflected in the maintenance support logistic function.

[2]These resources will include organic civilian and military manpower end-strengths shown separately for each fiscal year.

[3]Direct Navy refers to active Navy appropriations (e.g., MPN, O&MN, APN, MCON).

[4]Naval Reserves refers to reserve Navy appropriations (e.g., RPN, O&MNR).

[5]These manpower resources for organic activities and ship repair facilities will be shown only down to the material category level of detail. Civilian and active and reserve military manpower end-strengths will be shown separately for each fiscal year. The reserve military personnel will be consistent with the drill strengths shown in Program 5 of the DNFYP.

[6]All maintenance support at the organization level is considered under the maintenance and repair work performance category (overhaul/progressive maintenance, repair, inspect and test to include calibration, renovation and preventive maintenance).

[7]These dollar resources will include manpower and material costs shown separately for each fiscal year. The material costs will reflect only expenditures for expense type items. Contract maintenance will include only total costs for each fiscal year.

[8]All information will be shown in terms of weapon system.

[9]Intermediate level maintenance support dollar resources for organic activities will include manpower and material costs shown separately for each fiscal year down to the material categroy level of detail. Total cost will be shown for each fiscal year for contract maintenance and organic maintenance at the work breakdown structure and work performance category level of detail.

[10]All maintenance support at the intermediate level for these material categories is considered under the maintenance and repair work performance category.

[11]This will reflect the separate identification of depot maintenance accomplished for the Naval Reserves.

[12]For Organic and Ship Repair Facilities, dollar resources will include manpower, material and all other costs shown separately for each fiscal year. Contract and interservice support provided for the Navy dollar resources will include only total costs for each fiscal year.

[13]In the case of nuclear-powered ships, this category should show separately the resources for nuclear recore operations as a separate identifiable entry.

[14]This sub-functional category will reflect the manufacture and assembly programs conducted at the industrial-fund Naval Shipyards (PE 72028), Naval Ordnance Facilities (PE 72031) and the Naval Avionics Facility Indianapolis (PE 72026).

[15]Resources in this sub-function will be consistent with the investment resources displayed in aggregate categories in the Navy Procurement Annex.

[16]Dollar resources will be displayed for the following logistic sub-functions within the Material Support functional category: Investment in Logistic Support Hardware, Investment in Modification/Alteration/Conversion Kits, Investment in Material Support Facilities and Equipment, Petroleum, Oil and Lubricants and Stock-Funded Material (Non-ADD). Dollar and organic manpower (civilian and active and reserve military manpower end-strengths shown separately) resources will be displayed for the following logistic sub-functions: Supply Activities, Central Inventory Control Point Operations and Central Procurement Operations. The reserve military personnel will be consistent with the drill strengths shown in Program 5 of the DNFYP.

[17]Opposite each line item in this sub-functional category there will be Direct Navy resources that in the aggregate will be consistent with the resource requirements displayed in the Navy Procurement Annex for each fiscal year.

[18]In addition to the non-industrially-funded programs, this sub-functional category will include the Receipt, Storage, and Issue of Ammunition program (dollars and manpower) and the Port Terminal Operations program (dollars and manpower) that are accomplished at the industrially-funded Naval Ordnance Facilities (PE 72031).

[19]The Base Transportation sub-functional category is the only category that will require the display of both dollars and organic manpower (civilian and active and reserve military manpower end-strengths shown separately) resources. The reserve military personnel will be consistent with the drill strengths shown in Program 5 of the DNFYP.

[20]This will require a special report from Navy field activities.

[21]All of these resources are centrally administered and financed in Program 7 (Central Supply and Maintenance) of the FYDP. This logistic functional category includes sustaining engineering and technical assistance support.

[22]These manpower resources will include organic NIF and NON-NIF military and civilian manpower end-strengths shown separately for each fiscal year. The NIF and NON-NIF manpower are shown separately because they both perform significant amounts of workload.

[23]In addition to the non-industrially-funded programs, this functional category will include the demilitarization program that is accomplished at the industrially-funded Naval Ordnance Facilities (PE 72031) and Missile Facilities (PE 72009).

[24]This sub-functional category will include resources for the Naval Material Command Support Activity (NMCSA) financed by PE 72896 - Base Operations.

[25]This sub-functional category will include resources for the NAVAIR Pacific and Atlantic Fleet Representatives (PACREP and LANTREP) financed by PE 78012 - Logistic Support Activities.

[26]The stub for this sub-functional category will show separately the resources (dollars and manpower) associated with Security Assistance Programs for each fiscal year.

[27]This sub-functional category will include all other Program 7 resources that are not shown in the other functional categories.

[28]This sub-functional category will include only dollar resources and it excludes all investment in support facilities and equipment shown in A through H.

[29]These resources will include NIF and NON-NIF civilian and active and reserve military manpower end-strengths shown separately for each fiscal year. The reserve military personnel will be consistent with the drill strengths shown in Program 5 of the DNFYP.

[30]These resources will reflect customer orders placed on the industrially-funded Public Work Centers (PE 72037).

[31]This line item will include the NAVFAC O&MN resources shown in PE 91515 for GSA leasing requirements.

[32]This includes activities such as fire protection, custodial services, and refuse collection and disposal.

APPENDIX B

A COMPARISON OF THE LMI O&S COST GUIDE DATA ELEMENT STRUCTURES WITH THE FINAL IDA LOGISTIC DATA BASE STRUCTURE

A COMPARISON OF THE LMI O&S COST GUIDE DATA ELEMENT STRUCTURES WITH THE FINAL IDA LOGISTIC DATA BASE STRUCTURE

This section compares in detail the final IDA logistic data base structure presented in Table B-1, and the Operating and Support Cost Guide structures for aircraft and ships developed by the Logistics Management Institute (LMI) and presented in Tables B-2 and B-3.[1] LMI prepared preliminary drafts of these structures that can be used in making O&S cost estimates for proposed future weapon systems. The comparisons in this appendix are based on the information elements, primarily the rows (functions and sub-functions), required by the LMI O&S data base structure (aircraft and ships) and the IDA final structure.

The final IDA logistic data base structure focuses on a universe of logistic support activities as opposed to the total life cycle resource requirements of a weapon system. This universe is viewed in terms of nine distinct logistic functions and sub-functions (see Table 3 of Chapter II). The final structure identifies separately the resources (dollars and manpower) that relate to logistic support of Direct Navy activities, the Naval Reserves, interservice support provided to the Navy by other Services, and logistic support provided by the Navy to customers other than its own organizations. This support

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[1]M. Fiorello, N. Betague and A. Frager, *Operating and Support Cost Estimates for Aircraft Systems-Cost Development Guide*, Logistics Management Institute, Washington, D.C., December 1975; M. Fiorello, J. Wilk, P. Wroblewski and R. Salzer, *Ship Cost Development Guide for Support Investment and Operations and Support Costs*, Logistics Management Institute, Washington, D.C., May 1976.

Table B-1. THE FINAL IDA LOGISTIC DATA BASE STRUCTURE

Logistic Related Research and Development

- Reliability and Maintainability of Equipment
- Operational Resupply Techniques
- Pollution Abatement
- Energy Conservation
- All Other Logistic Related Projects

Maintenance

- Organization Level
- Intermediate Level
- Depot Level
- Investment in Maintenance Related Facilities and Equipment - Value

Material Support

- Investment in Logistic Support
- Hardware - Value
- Investment in Modification/Alteration/Conversion Kits - Value
- Investment in Material Support Facilities and Equipment - Value
- Supply Activities
- Central Inventory Control Point Operations
- Central Procurement Operations
- Petroleum, Oil and Lubricants (POL) - Value
- Stock-Funded Material (NON-ADD) - Value

Transportation

- Investment in Transportation Related Facilities and Equipment - Value
- Second Destination Transportation - Value
- Base Transportation

Engineering Support (Includes Technical Assistance)

- Aircraft
- Ships
- Missiles
- Expendable Ordnance and Munitions
- All Other Equipment

Inactive Equipment Disposal, Storage and Maintenance

- Aircraft
- Ships
- Missiles
- Expendable Ordnance and Munitions
- All Other Equipment

Logistic Headquarters Command and Administration

- NAVMAT
- NAVAIR
- NAVSEA
- NAVELEX
- NAVFAC
- NAVSUP
- SSPO

Miscellaneous Logistic Support Activities

- Naval Petroleum Reserves
- Industrial Preparedness
- Printing Plants and Laundries
- Central Logistic Training Activities
- All Other Activities

Installation Support

- Investment in Installation Support Facilities and Equipment - Value
- Command and Administration
- Real Property Maintenance Activities
- Base Services
- Base Communications
- Support of R&D Appropriation Financed Activities

Table B-2. LMI AIRCRAFT LIFE CYCLE COST ELEMENT STRUCTURE

Acquisition Cost Category	Support Investment Cost Category	Operations and Recurring Support Cost Category
Research and Development	Initial Provisioning	Logistic Support
Test and Evaluation	Reparable Spares	Maintenance Manpower
Development Tests	Consumable Material	Organizational
Technical Evaluation	Ordnance	Intermediate
Operational Evaluation	War Readiness Material	Depot
Mockups	Support Equipment	Maintenance Material
Test and Evaluation Support	Peculiar Support Equipment	Organizational
Test Facilities	Organizational	Intermediate
System Investment	Intermediate	Depot
System Production	Depot	System Management
Performance Modifications	Common Support Equipment	Second Destination Transportation
Project Management	Organizational	Technical Documentation Update
	Intermediate	Replacement of Reparable Spares
	Depot	Recurring Modifications (Safety and Maintenance)
	Documentation	Replacement of Common Support Equipment
	Facilities	ADP Software Modifications
	Industrial	Supply Depot Manpower and Material
	Operational/Site Activation	Unit Operations
	Other Defense	Combat Command Staff Manpower
	Training	Aircrew Manpower
	Devices	Munitions Maintenance Manpower
	Facilities	Training Ordnance
	Courses	Munitions
	Other Support Investment	Missiles
		Sonobuoys
		Replacement of War Reserve Material
		Aviation POL
		Unit Operating Support
		Unit Services Manpower
		Security
		Miscellaneous Support
		Personnel Support
		Recruit/Technical Training
		General Weapon
		Weapon System Peculiar
		Permanent Change of Station
		Medical Manpower/Material
		Miscellaneous Personnel Support
		Undergraduate Pilot/Navigator Training

Table B-3. LMI SHIP LIFE CYCLE COST ELEMENT STRUCTURE

Acquisition Cost Category	Support Investment Cost Category	Operations and Recurring Support Cost Category
Research, Development, Test and Evaluation Investment System Investment Sailaway Cost Project Management Performance Modifications Conversions and Modernizations Sailaway Cost Project Management	Support Equipment Peculiar Support Equipment Organizational Other Common Support Equipment Organizational Other Training Services Equipment Shipboard Training Aids Documentation and Software Publications and Technical Data ADP Software Development Facilities *Repairable Component Repair Facilities* Industrial Training Other Ashore Facilities Initial Spares and Repair Parts Spares Organizational Other Repair Parts Organizational Other Other Investment Expendable Stores War Reserve Stocks	Direct Unit Personnel Manpower Temporary Additional Duty Material Fuel Repair Parts Supplies Training Expendable Stores Direct Intermediate Maintenance Tenders Labor Material Ashore IMA Labor Material Industrial Maintenance Regular Ship Overhaul Labor Material Non-Scheduled Ship Repair (RA/TA) Labor Material Fleet Modernization Program Recore Selected Restricted Availability Labor Material Repairable Component Repair Labor Material Direct Sustaining Investments Replenishment Spares Special Program Material Special Training Indirect Support General Training Indirect Personnel Support Second Destination Transportation Engineering and Technical Services Other Logistics

includes interservice support provided by the Navy to other Services and the Navy Security Assistance Program (FMS and MAP).

Logistic support resources in the IDA final structure are identified in terms of weapon system when there is a logical basis for such identification. Resources are not prorated to weapon systems merely to allocate all Navy logistic resources to a major mission such as that represented by a weapon system. Two types of resources are identified to weapon systems: resources that are *explicitly shown* in terms of a particular weapon system such as initial spares; and resources that are *logically related* to weapon systems by a suitable proration technique. For example, it is possible to allocate common spare parts to particular weapon systems based on existing accounting or programming procedures. See Section C of Chapter II for a complete list of the functions and sub-functions that are identified to weapon systems.

The LMI structures are oriented toward the Direct Navy life cycle resource requirements that are identifiable by weapon system, of which logistic resources are a distinct subset. Many of these weapon system-oriented resource requirements are totally exogenous to the universe of logistic support activities. For example, in the LMI research the life cycle of a weapon system is addressed in terms of three general categories:

- Acquisition Cost Category [e.g., Research, Development, Test and Evaluation (RDT&E), system investment and performance modifications].
- Support Investment Cost Category (e.g., support equipment and data, initial spares and war reserve stocks).
- Operations and Recurring Support Cost Category (e.g., all levels of maintenance, replenishment spares, and engineering support).

Operating and Support (O&S) costs are defined as including the support investment and operations and recurring support categories data elements.

Figures B-1 and B-2 present detailed illustrations of the relationship between the IDA final structure in terms of functions and sub-functions and the LMI structures in terms of life cycle cost categories, functional areas and sub-functions. All of the IDA final structure functions are included in the LMI structures except:

- Logistic-Related Research and Development
- Inactive Equipment Disposal, Storage and Maintenance
- Miscellaneous Logistic Support Activities
- Installation Support.[1]

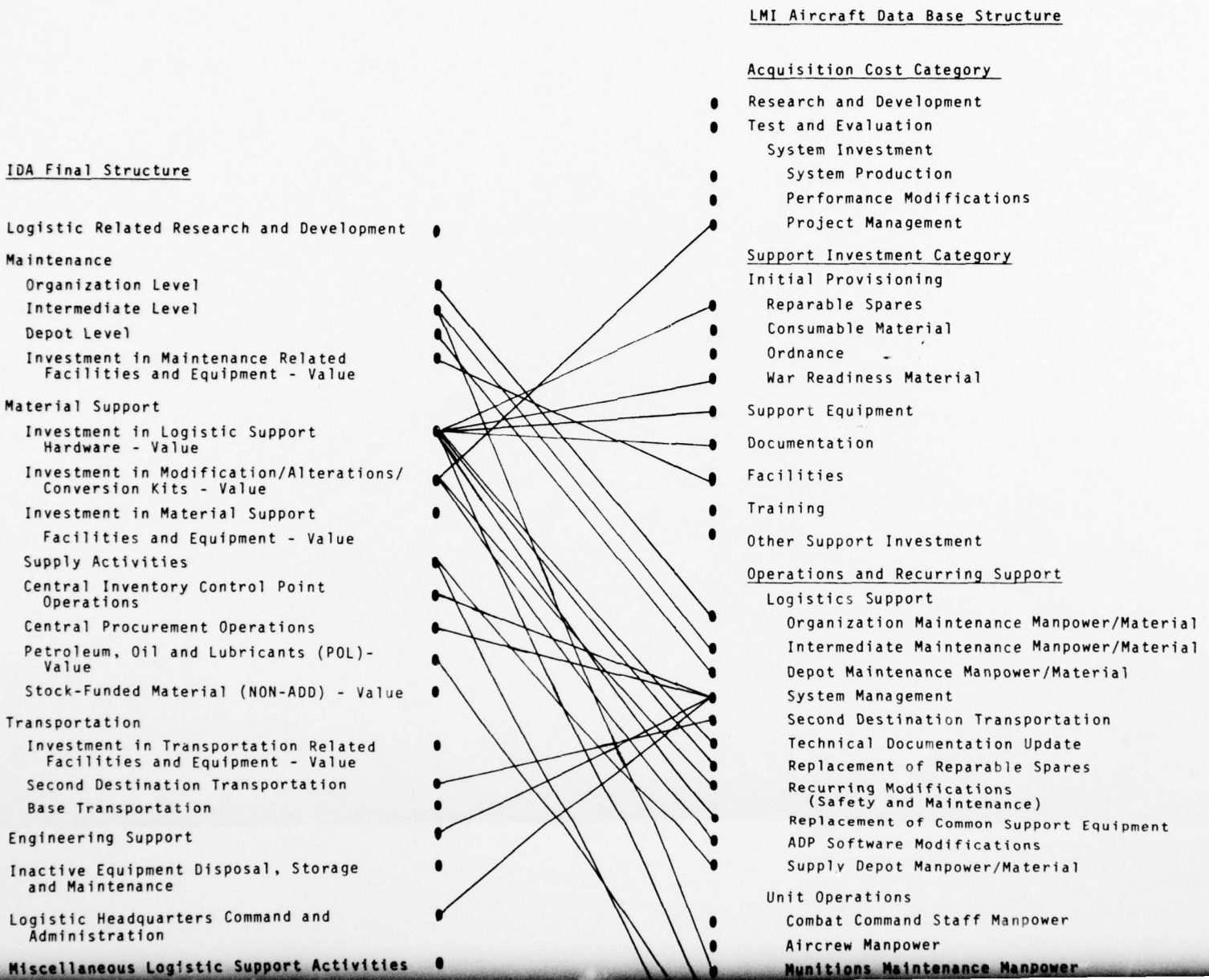
There are some IDA final structure sub-functions that are not included explicitly in the LMI structure.[2]

- Investment in Material Support Facilities and Equipment-Value and Intermediate Supply sub-functions of the Material Support function.
- Investment in Transportation-Related Facilities and Equipment-Value and Base Transportation sub-functions of the Transportation function.

The IDA Maintenance function and associated sub-functions are included in the LMI Operations and Recurring Support Cost category except for sea-based intermediate level Investment in Maintenance Related Facilities and Equipment-Value. The Investment in Maintenance Related Facilities and Equipment-Value

[1]The aircraft data base structure has provisions for some Installation Support sub-functions (i.e., Command and Administration, Real Property Maintenance, Base Services, Operation of Utilities and Base Communications) in the Unit Operating Support and Personnel Support functional areas within the Operations and Recurring Support Category. The ship data base structure has provisions to identify the resource requirements associated with piers, docks, anchorages, fuel storage sites, ammunition, depots, etc., required to support the operation of the ships.

[2]Investment in Maintenance Support Facilities and Equipment-Value is considered by LMI, but this refers only to organization, intermediate and depot level land-based maintenance capability. There are no provisions for intermediate sea-based maintenance capability such as tenders and repair ships. This could be because a tender or a repair ship is considered a weapon system.


IDA Final Structure
Logistic Related Research and Development
Maintenance
Organization Level
Intermediate Level
Depot Level
Investment in Maintenance Related Facilities and Equipment - Value
Material Support
Investment in Logistic Support Hardware - Value
Investment in Modification/Alterations/ Conversion Kits - Value
Investment in Material Support Facilities and Equipment - Value
Supply Activities
Central Inventory Control Point Operations
Central Procurement Operations
Petroleum, Oil and Lubricants (POL)- Value
Stock-Funded Material (NON-ADD) - Value
Transportation
Investment in Transportation Related Facilities and Equipment - Value
Second Destination Transportation
Base Transportation
Engineering Support
Inactive Equipment Disposal, Storage and Maintenance
Logistic Headquarters Command and Administration
Miscellaneous Logistic Support Activities
LMI Aircraft Data Base Structure
Acquisition Cost Category
Research and Development
Test and Evaluation
System Investment
System Production
Performance Modifications
Project Management
Support Investment Category
Initial Provisioning
Reparable Spares
Consumable Material
Ordnance
War Readiness Material
Support Equipment
Documentation
Facilities
Training
Other Support Investment
Operations and Recurring Support
Logistics Support
Organization Maintenance Manpower/Material
Intermediate Maintenance Manpower/Material
Depot Maintenance Manpower/Material
System Management
Second Destination Transportation
Technical Documentation Update
Replacement of Reparable Spares
Recurring Modifications (Safety and Maintenance)
Replacement of Common Support Equipment
ADP Software Modifications
Supply Depot Manpower/Material
Unit Operations
Combat Command Staff Manpower
Aircrew Manpower
Munitions Maintenance Manpower

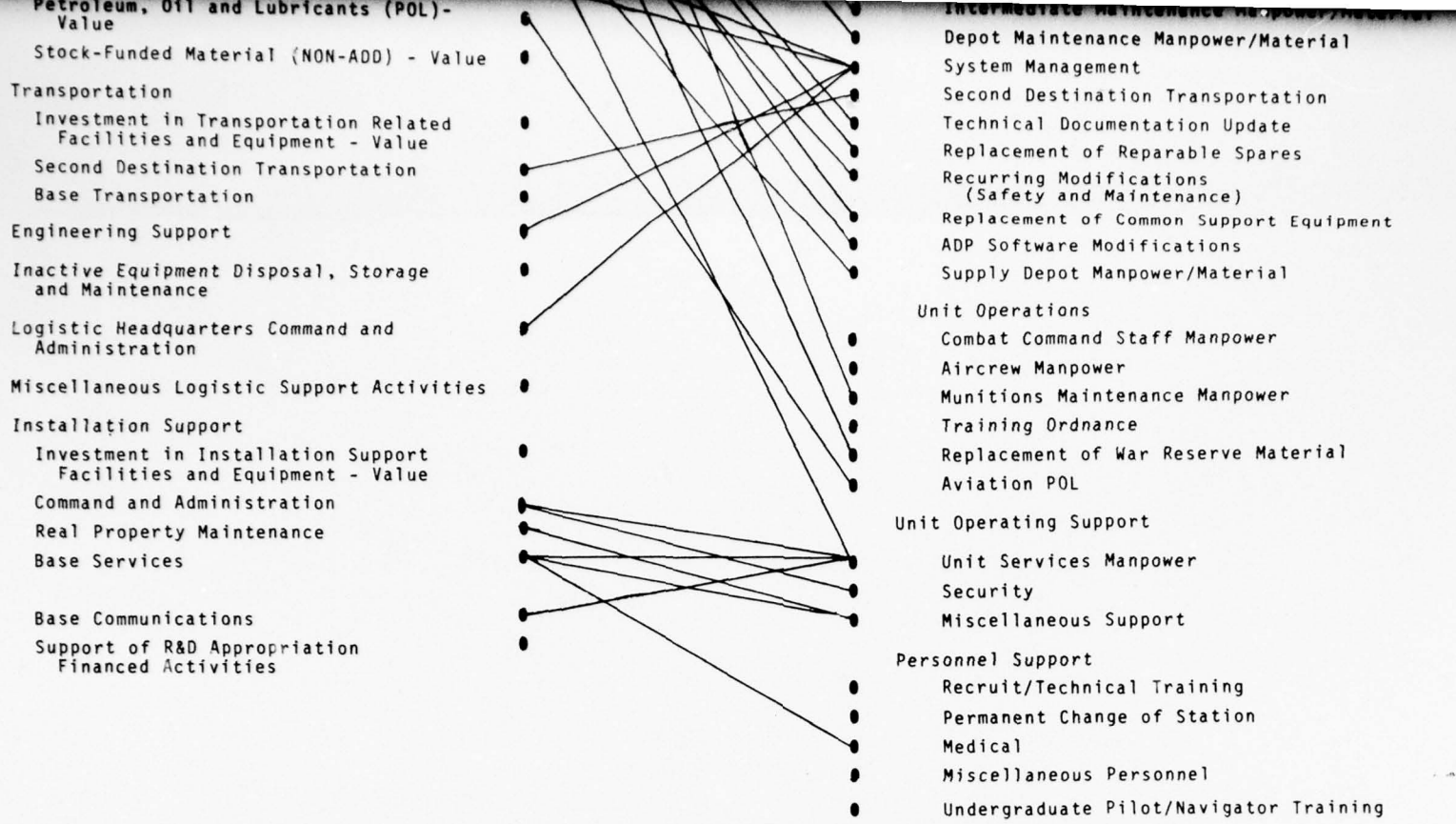


Figure B-1. THE RELATIONSHIPS OF THE IDA FINAL STRUCTURE TO THE LMI AIRCRAFT DATA BASE STRUCTURE

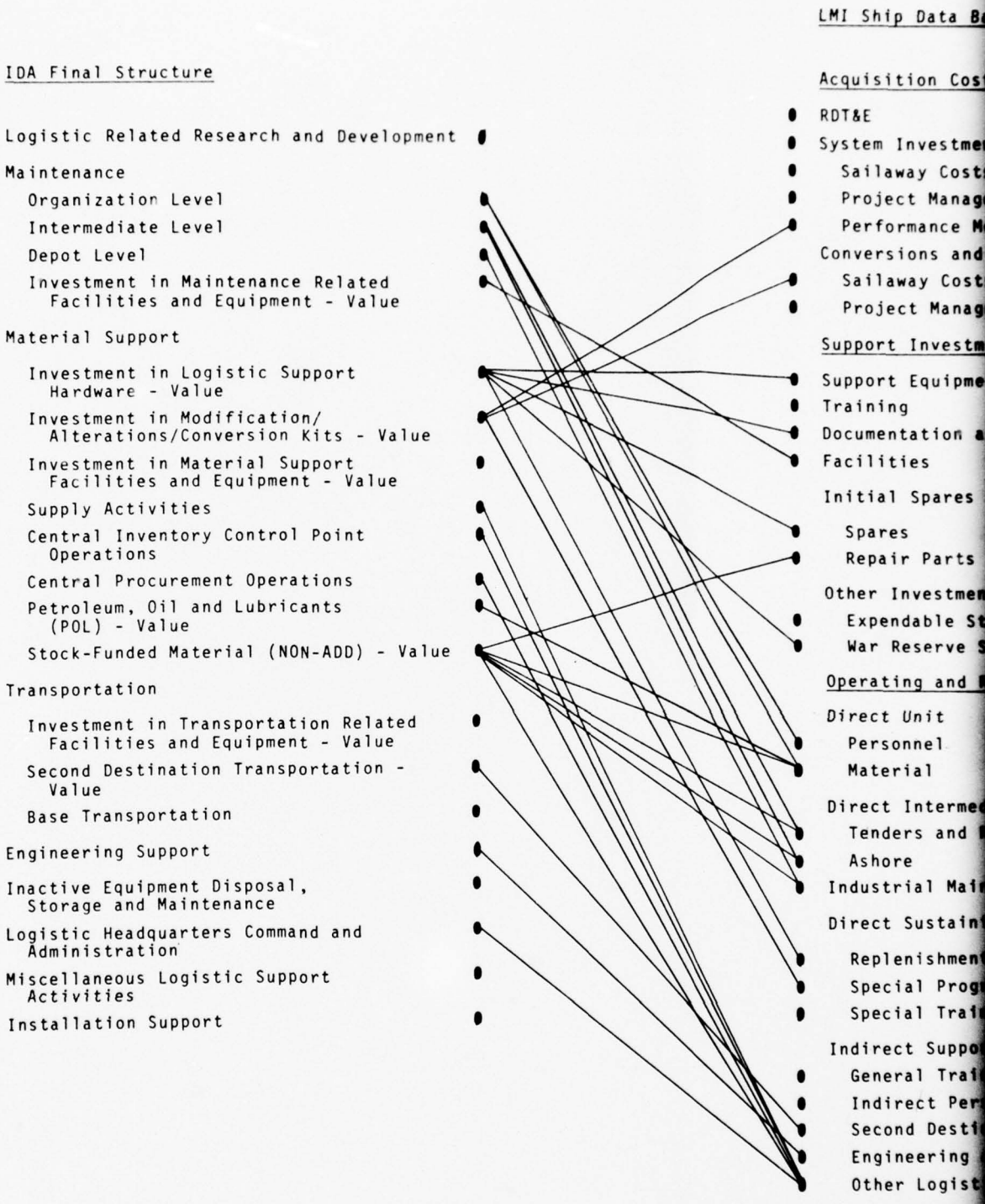
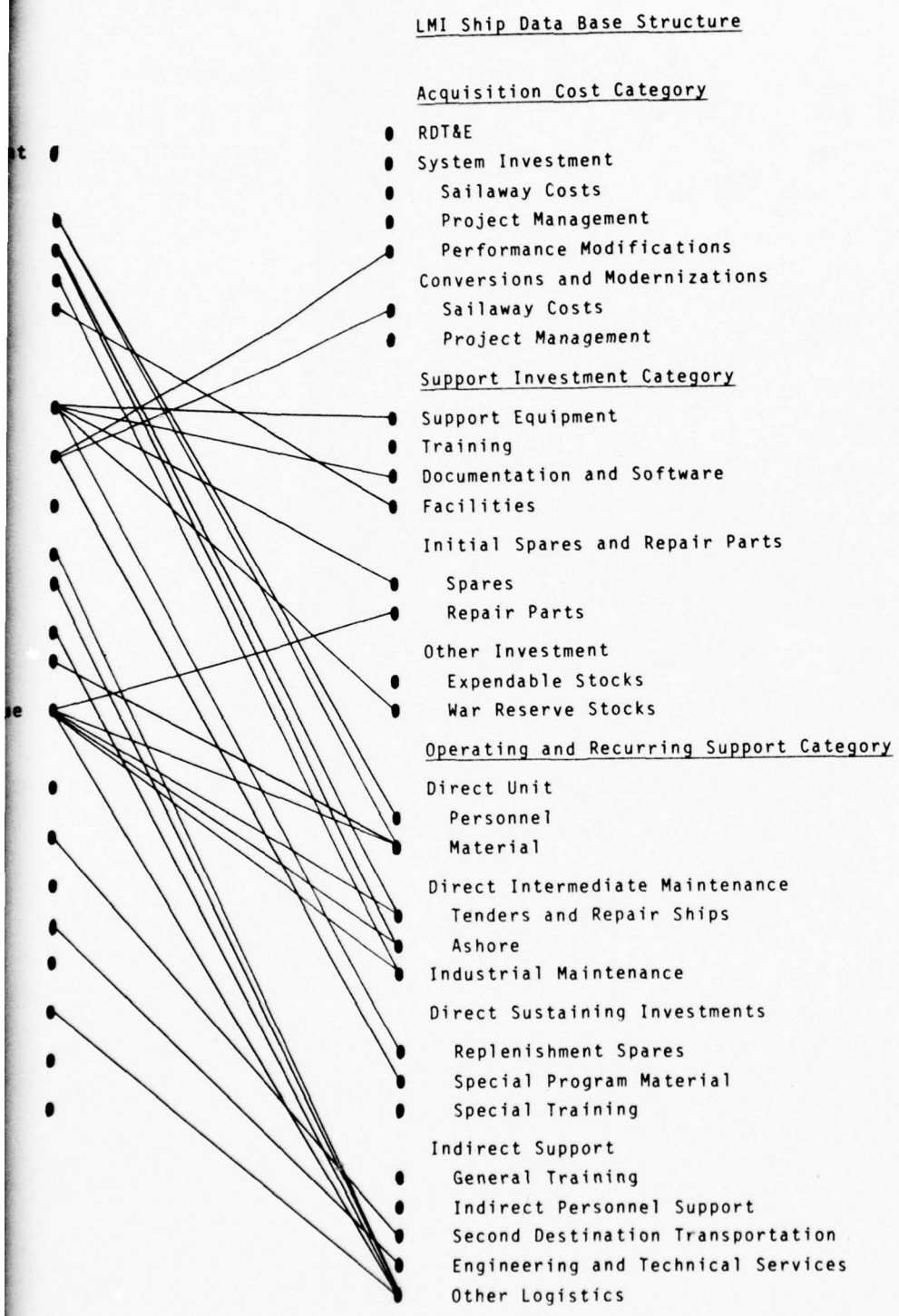


Figure B-2. THE RELATIONSHIPS OF THE IDA FINAL STRUCTUR TO THE LMI SHIP DATA BASE STRUCTURE



LATIONSHIPS OF THE IDA FINAL STRUCTURE
LMI SHIP DATA BASE STRUCTURE

2

sub-function, which shows organization, intermediate and depot land-based maintenance support capability, is included in the Facilities functional area within the Support Investment category of both the aircraft and ship data base structures. The LMI data base structure for ships captures total manpower and material associated with the operations and maintenance of the weapon system. This is the Direct Unit functional area within the Operating and Recurring Support category. The IDA final structure ship-related Organization Maintenance sub-function represents a distinct subset of the Direct Unit manpower and material shown in the LMI ship data base structure. The LMI structure for ships has functions for intermediate and depot maintenance, Direct Intermediate Maintenance and Industrial Maintenance. The LMI structure for aircraft has sub-functions within the Logistic Support function for Organization, Intermediate and Depot Maintenance (labor and material).

The IDA Material Support function and associated sub-functions are included in all three life cycle cost categories of the LMI structure. The Investment in Logistic Support Hardware-Value sub-function is included in the Support Investment and Operations and Recurring Support Cost categories. Initial spares are a sub-function within the Initial Provisioning function for aircraft, and within the Initial Spares and Repair Parts function for ships within the Support Investment category. Support equipment and data represent two distinct functions for aircraft (Support Equipment and Documentation) and ships (Support Equipment and Documentation and Software) within the Support Investment category. Ship-related war reserve stocks are a sub-function of the Other Investment function within the Support Investment Cost category. Aircraft-related war reserve stocks are considered as a sub-function of the Initial Provisioning function within the Support Investment category and the Unit Operations function within the Operating

and Recurring Support Cost category. Replenishment spares are in the Direct Sustaining Investment function for ships and a sub-function (Replacement of Repairable Spares) of the Logistic Support function for aircraft within the Operations and Recurring Support category.

The Investment in Modification/Alteration/Conversion Kits-Value sub-function is included in the Acquisition and Operations and Recurring Support Cost categories. Ship conversions, Class V aircraft modifications (conversion in lieu of procurement), and the military improvement program portion of ship and ordnance alterations of the IDA final structure are in the LMI Conversion and Modernization and Performance Modifications sub-functions of the System Investment function within the Acquisition Cost category. The IDA final structure Class IV aircraft modifications (operational safety improvement and service life extension), and the technical improvement program portion of ship and ordnance alterations are included as sub-functions within the Operations and Recurring Support Cost categories. Class IV aircraft modifications are included in the Recurring Modification sub-function within the Logistic Support function. The ship and ordnance alterations are included in the Industrial Maintenance (installation) and Direct Sustaining Investments (Special Program Material) functions.

The LMI Operating and Recurring Support category includes the IDA final structure Organization Supply for ships. As is the case for the Organization Maintenance sub-function, the final structure Organization Supply for ships represents a subset of the manpower and material included in the Direct Unit function. Depot Supply Activities, Central Inventory Control Point Operations, and Central Procurement for ships are included in the Other Logistics sub-function of the Indirect Support function. In the case of aircraft, Depot Supply Activities represents a sub-function of the Logistic Support function,

and Central Inventory Control Point Operations and Central Procurement Operations are included in the System Management sub-function of the Logistic Support function.

The Operations and Recurring Support category also contains the following final structure functions and sub-functions:

- Petroleum, Oil and Lubricants (POL)-Value sub-function of the Material Support function as a sub-function of the Direct Unit functional area for ships and Unit Operations functional area for aircraft.
- Stock-funded Material-Value sub-function of the Material Support function as a sub-function of the Direct Unit (organization maintenance), Direct Intermediate Maintenance and Industrial Maintenance functional areas for ships, and the Logistic Support and Unit Operating Support functional areas for aircraft.[1]
- Second Destination Transportation-Value sub-function of the Transportation function as a sub-function of the Logistic Support functional area for aircraft and Indirect Support functional area of ships.
- Engineering Support function as a sub-function of the Indirect Support functional area for ships and included in the Systems Management sub-function of the Logistic Support functional area for aircraft.
- Logistic Headquarters Command and Adminstration function as a sub-function (Other Logistics) of the Indirect Support functional area for ships and included in the Systems Management sub-function of the Logistic Support functional area of aircraft.

In addition to the differences between the IDA and LMI structures highlighted earlier in the discussion, the LMI structures (aircraft and ships) have provisions to identify weapon system-oriented resource requirements that are exogenous to the universe of logistic support activities. These resource requirements are:

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[1]That portion of stock-funded repair parts associated with the initial outfitting of a ship or aircraft are included as a sub-function in the Initial Spares and Repair Parts and Initial Provisioning functional area, respectively, of the Support Investment category.

- Research, Development, Test and Evaluation (RDT&E) associated with the introduction of the weapon system into the active inventory.
- Procurement costs of the weapon system (System Investment functional area) and associated expendable ordnance.
- Project management associated with the introduction of the weapon system into the active invenotry.
- General training-related services, equipment, and facilities associated with the operation and maintenance of the weapon system.
- Total manpower directly associated with the operation and maintenance of the weapon system (except organization supply and maintenance).
- Permanent Change of Station Travel of Military Personnel.

In summary, the LMI structures are oriented toward the Direct Navy life cycle resource requirements that are identifiable to weapon systems. Logistic resources represent one element of these requirements. The IDA final structure focuses on a universe of logistic support activities that relate to the full spectrum of Navy organizations, interservice support, and the Security Assistance Program, only some of which are identifiable to weapon systems. Therefore, some information elements that are included in the LMI structures are excluded from the IDA final structure and vice versa.

Generally, the IDA final structure logistic functions and sub-functions that are to be identified in terms of weapon systems are included explicitly in the LMI data base structures (aircraft and ships).[1] The logistic sub-functions that are not included in the LMI structures are:

- Logistic Related Research and Development
- Inactive Equipment Disposal, Storage, and Maintenance

[1]See Section B of Chapter II for a list of final structure logistic support resource requirements that will be identified in terms of weapon systems.

- Miscellaneous Logistic Support Activities
- Installation Support
- Investment in Maintenance Support Facilities and Equipment-Value associated with sea-based intermediate maintenance support capability.
- Intermediate (sea-based and land-based) Supply Activities.

The IDA final structure logistic functions and sub-functions that are not included in the LMI structure are primarily resources that cannot be identified in terms of weapon systems.

APPENDIX C

THE LOGISTIC RESOURCE ANNEX (LRA)

THE LOGISTIC RESOURCE ANNEX (LRA)

This document provides improved visibility of the dollar and manpower resources allocated by the Navy to support the approved programs displayed in the basic FYDP to which this annex applies. Logistic support resources have been extracted from the appropriate program elements and displayed on formats that relate resources to the function performed and, in some cases, to equipment supported.

The LRA covers total Navy logistic support resources--the total dollars and manpower to support Navy programs as well as manpower to support non-Navy programs. In addition, for information purposes, dollars to support non-Navy programs are also displayed even though these resources are not direct Navy resources. To facilitate display of these resources in these categories, the following terminology has been adopted.

Navy Programs	Programs funded either by Navy or Reserve Navy appropriations; excludes funds for family housing, support of other Military Services under Interservice Support Programs, and Security Assistance; excludes programs initially paid for from Navy appropriations but later reimbursed from non-Navy appropriations and other sources (e.g., FMS Trust Fund).
All Other Programs	Reimbursable programs supported by the Navy but funded by non-Navy activities. Manpower to support these programs is a part of the Navy's total authorized manpower ceiling. Dollars displayed for these programs are, however, non-add in the sense that they are not a

	part of the "Direct Navy Programs (TOA)" shown in the FYDP (e.g., FYDP Summary Table 1).
All Programs	Total dollars to support Navy Programs and total manpower to support both Navy and All Other Programs as defined above.

This LRA is divided into four major sections. The first section is comprised of summary level formats designed to provide an overview of the Navy's allocation of total logistic support resources. Formats in the remaining sections provide detailed displays to substantiate these summary formats, but each section focuses on a different aspect of logistic support as shown in Figure C-1. Detailed titles, presented in the List of Figures, are used to permit users of this annex to locate specific formats.

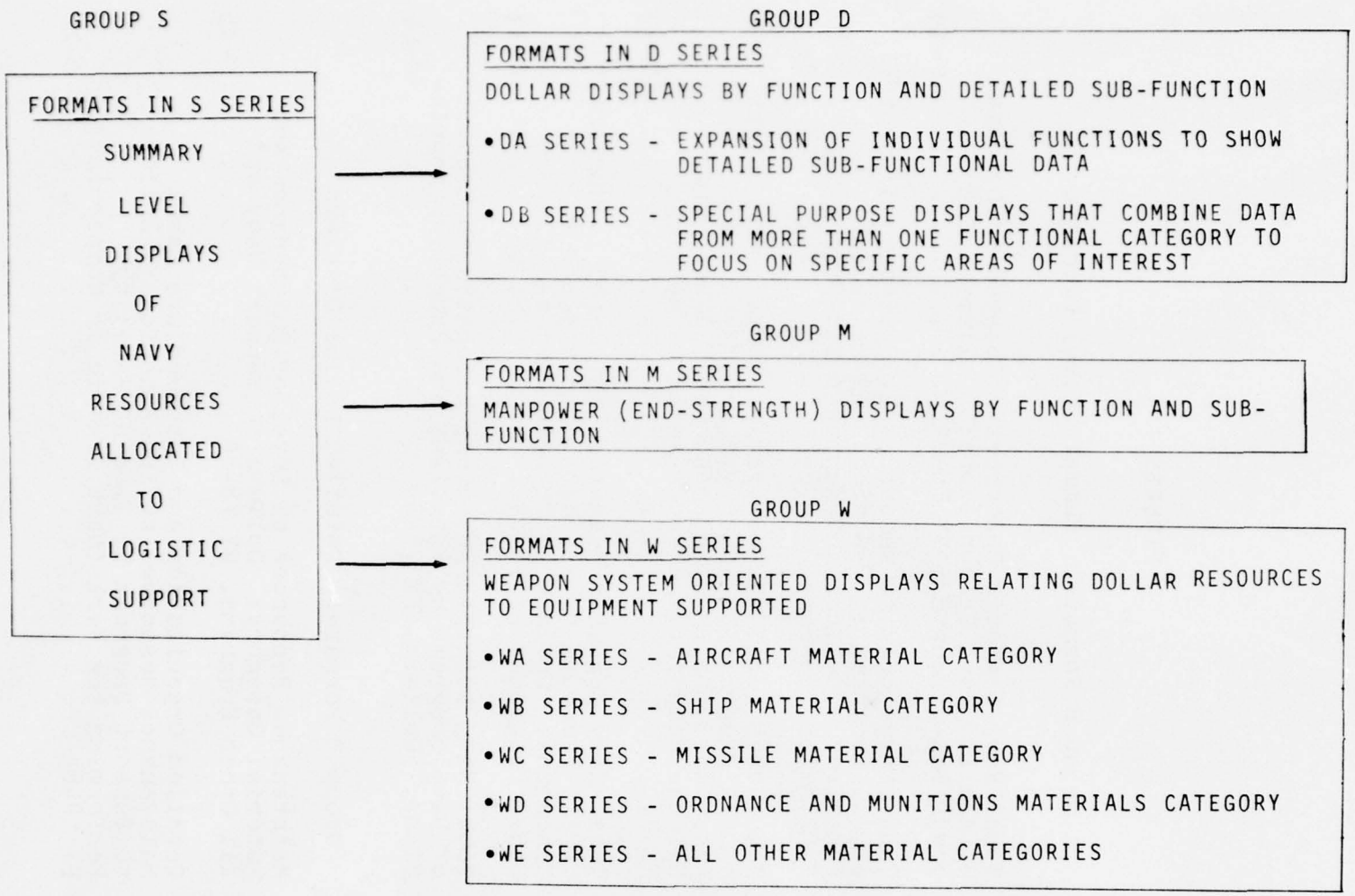

Figure C-1. FORMATS BY GROUP AND DATA DISPLAYED

FIGURES

Group S Formats: Summary Level Displays

Group D Formats: Detailed Dollar Displays

[1]This number is reserved for the format that will display ship logistic support costs in terms of individual ship classes. An illustrative format is not included in this appendix because, as pointed out in Chapter III and Appendix E, the specific ship classes to be displayed have not been established. See the discussion of Format WA-4 (the aircraft counterpart to Format WB-4) which identifies issues associated with the selection of individual weapon systems to be displayed in the LRA.

Note: For each of the three material category groupings--only two of the six formats that would be published in the LRA are included. The first and third formats are included to illustrate differences in sub-functional detail and system categories for each material category. The remaining formats for each material category, similar in design to their counterparts in the WA and WB series, are not included to reduce the overall volume of this study.

Logistic Functions	FY-78 Total All Programs			→	FY-84 Total All Programs		
	Dollars	Manpower		→	Dollars	Manpower	
		Mil	Civ			Mil	Civ
Logistics-Related Research and Development							
Maintenance							
Material Support							
Engineering Support							
Transportation							
Inactive Equipment Disposal, Storage and Maintenance							
Logistic Headquarters Command and Administration							
Miscellaneous Logistic Support Activities							
Installation Support							
TOTAL LOGISTIC RESOURCES							

Figure S-1. TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTIONS: DOLLARS AND MANPOWER END-STRENGTHS, FY 78-84

Logistic Functions and Sub-Functions	FY-78								FY-84						
	Program 1			→	Program 10			→	Program 1			→	Program 10		
	Dollars	Manpower		→	Dollars	Manpower		→	Dollars	Manpower		→	Dollars	Manpower	
		Mil	Civ			Mil	Civ			Mil	Civ			Mil	Civ
LOGISTIC RELATED RESEARCH AND DEVELOPMENT															
MAINTENANCE Organization Level Intermediate Level Depot Level Investment in Maintenance Related Facilities and Equipment - Value															
Total Maintenance															
MATERIAL SUPPORT Investment in Logistic Support Hardware - Value Investment in Modification/Alteration/Conversion Kits - Value Investment in Material Support Facilities and Equipment - Value Supply Activities Central Inventory Control Point Operations Central Procurement Operations Petroleum, Oil and Lubricants (POL) - Value Stock-Funded Material (NON-ADD) - Value															
Total Material Support															
TRANSPORTATION Investment in Transportation Related Facilities and Equipment - Value Second Destination Transportation - Value Base Transportation															
Total Transportation															
ENGINEERING SUPPORT															
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE															
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION															
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES Naval Petroleum Reserves Industrial Preparedness Printing Plants and Laundries Central Logistic Training Activities All Other Activities															
Total Miscellaneous Logistic Support Activities															
INSTALLATION SUPPORT Investment in Installation Support Facilities and Equipment - Value Command and Administration Real Property Maintenance Activities Base Services Base Communications Support of R&D Appropriation Financed Activities															
Total Installation Support															
GRAND TOTAL, LOGISTIC RESOURCES															

Figure S-2. TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTIONS AND MAJOR SUB-FUNCTIONS: DOLLARS AND MANPOWER END-STRENGTHS, FYDP MAJOR PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	Defense Planning and Programming Categories																							
	Strategic Forces			General Purpose Forces			Auxiliary Forces			Mission Support Forces			Central Support Forces			Individuals			Miscellaneous			Total		
	Dollars	Manpower		Dollars	Manpower		Dollars	Manpower		Dollars	Manpower		Dollars	Manpower		Dollars	Manpower		Dollars	Manpower		Dollars	Manpower	
		Mil	Civ		Mil	Civ		Mil	Civ		Mil	Civ		Mil	Civ		Mil	Civ		Mil	Civ		Mil	Civ
LOGISTIC RELATED RESEARCH AND DEVELOPMENT																								
MAINTENANCE																								
Organization Level																								
Intermediate Level																								
Depot Level																								
Investment in Maintenance Related Facilities and Equipment - Value																								
Total Maintenance																								
MATERIAL SUPPORT																								
Investment in Logistic Support Hardware - Value																								
Investment in Modification/Alteration/Conversion Kits - Value																								
Investment in Material Support Facilities and Equipment - Value																								
Supply Activities																								
Central Inventory Control Point Operations																								
Central Procurement Operations																								
Petroleum, Oil and Lubricants (POL) - Value																								
Stock-Funded Material (NON-ADD) - Value																								
Total Material Support																								
TRANSPORTATION																								
Investment in Transportation Related Facilities and Equipment - Value																								
Second Destination Transportation - Value																								
Base Transportation																								
Total Transportation																								
ENGINEERING SUPPORT																								
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																								
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION																								
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES																								
Naval Petroleum Reserves																								
Industrial Preparedness																								
Printing Plants and Laundries																								
Central Logistic Training Activities																								
All Other Activities																								
Total Miscellaneous Logistic Support Activities																								
INSTALLATION SUPPORT																								
Investment in Installation Support Facilities and Equipment - Value																								
Command and Administration																								
Real Property Maintenance Activities																								
Base Services																								
Base Communications																								
Support of R&D Appropriation Financed Activities																								
Total Installation Support																								
GRAND TOTAL, LOGISTIC RESOURCES																								

Figure S-3. TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTIONS AND MAJOR SUB-FUNCTIONS: DOLLARS AND MANPOWER END-STRENGTHS DEFENSE PLANNING AND PROGRAMMING CATEGORIES, FY 78

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
LOGISTIC RELATED RESEARCH AND DEVELOPMENT					
Reliability and Maintainability of Equipment					
Operational Supply Techniques					
Pollution Abatement					
Energy Conservation					
All Other Logistics Related Projects					
Total Logistic Related Research and Development					
MAINTENANCE					
Organization Level					
Intermediate Level					
Depot Level					
Investment in Maintenance Related Facilities and Equipment - Value					
Total Maintenance					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Investment in Modification/Alteration/Conversion Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Supply Activities					
Central Inventory Control Point Operations					
Central Procurement Operations					
Petroleum, Oil and Lubricants - Value					
Stock-Funded Material (NON-ADD) - Value					
Total Material Support					
TRANSPORTATION					
Investment in Transportation Related Facilities and Equipment - Value					
Second Destination Transportation - Value					
Base Transportation					
Total Transportation					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION					
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES					
Naval Petroleum Reserves					
Industrial Preparedness					
Printing Plants and Laundries					
Central Logistic Training Activities					
All Other Activities					
Total Miscellaneous Logistic Support Activities					
INSTALLATION SUPPORT					
Investment in Installation Support Facilities and Equipment - Value					
Command and Administration					
Real Property Maintenance Activities					
Base Services					
Base Communications					
Support of R&D Appropriation Financed Activities					
Total Installation Support					
GRAND TOTAL, LOGISTIC RESOURCES					

Figure S-4. TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL PROGRAMS BY FUNCTIONS AND MAJOR SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Functions and Budget Appropriations	FY-78	FY-79	FY-80	FY-81	FY-82	FY-83	FY-84
LOGISTIC-RELATED RESEARCH AND DEVELOPMENT							
RDT&EN							
MAINTENANCE							
MCON							
MCONR							
MPN							
O&MN							
O&MNR							
OPN							
RDT&EN							
RPN							
Total Maintenance							
MATERIAL SUPPORT							
APN							
MCON							
MCNR							
MPN							
Navy Stock-Fund							
O&MN							
O&MNR							
OPN							
RPN							
SCN							
WPN							
Total Material Support							
ENGINEERING SUPPORT							
MPN							
O&MN							
O&MNR							
RDT&EN							
Total Engineering Support							
TRANSPORTATION							
MCON							
MCNR							
MPN							
O&MN							
O&MNR							
OPN							
RPN							
Total Transportation							
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE							
MCON							
MPN							
O&MN							
OPN							
Total Inactive Equipment Disposal, Storage and Maintenance							
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION							
MPN							
O&MN							
O&MNR							
RPN							
Total Logistic Headquarters Command and Administration							
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES							
MPN							
NPR							
O&MN							
O&MNR							
OPN							
RDT&EN							
RPN							
SCN							
WPN							
Total Miscellaneous Logistic Support Activities							
INSTALLATION SUPPORT							
FHD							
MCON							
MCNR							
O&MN							
O&MNR							
OPN							
RDT&EN							
RPN							
Total Installation Support							
TOTAL LOGISTIC RESOURCES							
APN							
FHD							
MCON							
MCNR							
MPN							
Navy Stock-Fund							
NPR							
O&MN							
O&MNR							
OPN							
RDT&EN							
RPN							
SCN							
WPN							
GRAND TOTAL, LOGISTIC RESOURCES							

Figure S-5. TOTAL NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF NAVY PROGRAMS BY FUNCTIONS AND BUDGET APPROPRIATIONS: DOLLARS, FY 78-84

Logistic Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
ORGANIZATION LEVEL Aircraft and Associated End Items Ships and Associated End Items Missiles Construction/Automotive Equipment Electronic and Communication Systems Expendable Ordnance and Munitions All Other Equipment					
Total Organization Level					
INTERMEDIATE LEVEL Aircraft and Associated End Items Ships and Associated End Items Missiles Construction/Automotive Equipment Electronic and Communication Systems Expendable Ordnance and Munitions All Other Equipment					
Total Intermediate Level					
DEPOT LEVEL Aircraft and Associated End Items Ships and Associated End Items Missiles Construction/Automotive Equipment Electronic and Communication Systems Expendable Ordnance and Munitions All Other Equipment Other Depot Maintenance Workload					
Total Depot Level					
INVESTMENT IN MAINTENANCE RELATED FACILITIES AND EQUIPMENT - VALUE Organization Intermediate Depot					
Total Investment in Maintenance Related Facilities and Equipment - Value					
GRAND TOTAL, MAINTENANCE RESOURCES					

Figure DA-1. MAINTENANCE RESOURCES BY LEVEL OF MAINTENANCE AND MATERIAL CATEGORY: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Sub-Functions	FY-78			→	FY-84		
	Navy Programs			→	Navy Programs		
	Navy Organic Facilities	Commercial Facilities	Total	→	Navy Organic Facilities	Commercial Facilities	Total
ORGANIZATION LEVEL MAINTENANCE AND REPAIR							
Aircraft and Associated End Items							
Ships and Associated End Items							
Missiles							
Construction/Automotive Equipment							
Electronic and Communication Systems							
Expendable Ordnance and Munitions							
All Other Equipment							
Total Organization Level Maintenance and Repair							
INTERMEDIATE LEVEL							
Aircraft and Associated End Items							
Airframe							
Maintenance and Repair							
Modification (Installation)							
Other							
Engine Maintenance and Repair							
Components and Accessories Maintenance and Repair							
All Other Equipment							
Ships and Associated End Items							
Hull/Structure							
Maintenance and Repair							
Alteration (Installation)							
Restricted/Technical Availabilities							
Other							
Propulsion Plant							
Maintenance and Repair							
Alteration (Installation)							
Restricted/Technical Availabilities							
Other							
Other Equipment							
Maintenance and Repair							
Alteration (Installation)							
Restricted/Technical Availabilities							
Missiles							
Maintenance and Repair							
Modification							
Other							
Construction/Automotive Equipment							
Electronic and Communication Systems							
Expendable Ordnance and Munitions							
All Other Equipment							
Total Intermediate Level							
INVESTMENT IN MAINTENANCE RELATED FACILITIES AND EQUIPMENT - VALUE							
Organization Level							
Intermediate Level							
Total Investment in Maintenance Related Facilities and Equipment - Value							
GRAND TOTAL, ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE							

Figure DA-1A. DETAILED ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT PROGRAMS BY TYPE OF FACILITY PERFORMING THE WORK (NAVY ORGANIC OR COMMERCIAL) FY 78-84

Logistic Sub-Functions	FY-78			→	FY-84		
	Cost of Work Performed in Navy Organic Facilities			→	Cost of Work Performed in Navy Organic Facilities		
	Manpower	Material	Total	→	Manpower	Material	Total
ORGANIZATION LEVEL Aircraft and Associated End Items Ships and Associated End Items Missiles Construction/Automotive Equipment Electronic and Communication Systems Expendable Ordnance and Munitions All Other Equipment							
Total Organization Level							
INTERMEDIATE LEVEL Aircraft and Associated End Items Missiles Construction/Automotive Equipment Electronic and Communication Systems Expendable Ordnance and Munitions All Other Equipment							
Total Intermediate Level							
GRAND TOTAL, ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE							

Figure DA-1B. DETAILED ORGANIZATION AND INTERMEDIATE LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: MANPOWER, MATERIAL AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78-84

Logistic Sub-Functions	FY-78 Navy Programs				→	FY-84 Navy Programs			
	Navy Organic Facilities	Commercial Facilities	Interservice Facilities	Total	→	Navy Organic Facilities	Commercial Facilities	Interservice Facilities	Total
AIRCRAFT AND ASSOCIATED END ITEMS									
Airframe									
Maintenance and Repair									
Modification (Installation)									
Other									
Engine									
Maintenance and Repair									
Modification (Installation)									
Other									
Components and Accessories									
Maintenance and Repair									
Modification (Installation)									
Other									
Other Equipment									
Maintenance and Repair									
All Other									
Total Aircraft and Associated End Items									
SHIPS AND ASSOCIATED END ITEMS									
Hull/Structure									
Maintenance and Repair									
Alteration (Installation)									
Conversion (Installation)									
Restricted/Technical Availabilities									
Other									
Propulsion Plants									
Maintenance and Repair									
Alteration (Installation)									
Conversion (Installation)									
Restricted/Technical Availabilities									
Other									
Other Equipment									
Maintenance and Repair									
Alteration (Installation)									
Conversion (Installation)									
Restricted/Technical Availabilities									
Other									
Total Ships and Associated End Items									
MISSILES									
Maintenance and Repair									
Modification (Installation)									
Other									
Total Missiles									
CONSTRUCTION/AUTOMOTIVE EQUIPMENT									
Maintenance and Repair									
Other									
Total Construction/Automotive Equipment									
ELECTRONIC AND COMMUNICATION SYSTEMS									
Maintenance and Repair									
Modification (Installation)									
Other									
Total Electronic and Communication Systems									
EXPENDABLE ORDNANCE AND MUNITIONS									
Ammunition Maintenance and Repair									
Torpedoes									
Maintenance and Repair									
Modification (Installation)									
Mines/Depth Charges Maintenance and Repair									
Bombs Maintenance and Repair									
All Other Expendable Ordnance and Munitions Maintenance									
Total Expendable Ordnance and Munitions									
ALL OTHER EQUIPMENT MAINTENANCE AND REPAIR									
ALL OTHER DEPOT MAINTENANCE ACTIVITIES									
Manufacture and Assembly									
Other Depot Maintenance Workload									
Total All Other Depot Maintenance Activities									
INVESTMENT IN MAINTENANCE RELATED FACILITIES AND EQUIPMENT - VALUE									
GRAND TOTAL, NAVY DEPOT LEVEL RESOURCES TO SUPPORT NAVY PROGRAMS									

Figure DA-1C. DETAILED DEPOT LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY PROGRAMS, TYPE OF FACILITY PERFORMING WORK (NAVY ORGANIC, COMMERCIAL, OR OTHER MILITARY SERVICES), FY 78-84

Logistic Sub-Functions	All Other Programs (Non-Navy Workloads)						
	Security Assistance Programs		Navy Support of Interservice Programs		Other Programs		
	Navy Organic Facilities	Commercial Facilities	Navy Organic Facilities	Commercial Facilities	Navy Organic Facilities	Commercial Facilities	Organ
AIRCRAFT AND ASSOCIATED END ITEMS							
Airframe							
Maintenance and Repair							
Modification (Installation)							
Other							
Engine							
Maintenance and Repair							
Modification (Installation)							
Other							
Components and Accessories							
Maintenance and Repair							
Modification (Installation)							
Other							
Other Equipment							
Maintenance and Repair							
All Other							
Total Aircraft and Associated End Items							
SHIPS AND ASSOCIATED END ITEMS							
Hull/Structure							
Maintenance and Repair							
Alteration (Installation)							
Conversion (Installation)							
Restricted/Technical Availabilities							
Other							
Propulsion Plants							
Maintenance and Repair							
Alteration (Installation)							
Conversion (Installation)							
Restricted/Technical Availabilities							
Other							
Other Equipment							
Maintenance and Repair							
Alteration (Installation)							
Conversion (Installation)							
Restricted/Technical Availabilities							
Other							
Total Ships and Associated End Items							
MISSILES							
Maintenance and Repair							
Modification (Installation)							
Other							
Total Missiles							
CONSTRUCTION/AUTOMOTIVE EQUIPMENT							
Maintenance and Repair							
Other							
Total Construction/Automotive Equipment							
ELECTRONIC AND COMMUNICATION SYSTEMS							
Maintenance and Repair							
Modification (Installation)							
Other							
Total Electronic and Communication Systems							
EXPENDABLE ORDNANCE AND MUNITIONS							
Ammunition Maintenance and Repair							
Torpedoes							
Maintenance and Repair							
Modification (Installation)							
Mines/Depth Charges Maintenance and Repair							
Bombs Maintenance and Repair							
All Other Expendable Ordnance and Munitions							
Maintenance and Repair							
Total Expendable Ordnance and Munitions							
ALL OTHER EQUIPMENT MAINTENANCE AND REPAIR							
ALL OTHER DEPOT MAINTENANCE ACTIVITIES							
Manufacture and Assembly							
Other Depot Maintenance Workload							
Total All Other Depot Maintenance Activities							
GRAND TOTAL, NAVY DEPOT LEVEL RESOURCES TO SUPPORT NON-NAVY PROGREMS							

Figure DA-1D. DETAILED DEPOT LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLL
NON-NAVY PROGRAMS, TYPE OF FACILITY PERFORMING THE WORK (NAVY ORGA
OR OTHER MILITARY SERVICES), FY 78

All Other Programs (Non-Navy Workloads)						
Programs	Navy Support of Interservice Programs		Other Programs		Total	
ercial Facilities	Navy Organic Facilities	Commercial Facilities	Navy Organic Facilities	Commercial Facilities	Navy Organic Facilities	Commercial Facilities

L MAINTENANCE RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT
TYPE OF FACILITY PERFORMING THE WORK (NAVY ORGANIC, COMMERCIAL,
ERVICES), FY 78

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Logistic Sub-Functions	FY-78 Cost of Work Performed in Navy Organic Facilities				FY-84 Cost of Work Performed in Navy Organic Facilities			
	Manpower	Material	Other	Total	Manpower	Material	Other	Total
AIRCRAFT AND ASSOCIATED END ITEMS								
Airframe								
Maintenance and Repair								
Modification (Installation)								
Other								
Engine								
Maintenance and Repair								
Modification (Installation)								
Other								
Components and Accessories								
Maintenance and Repair								
Modification (Installation)								
Other								
Other Equipment								
Maintenance and Repair								
All Other								
Total Aircraft and Associated End Items								
SHIPS AND ASSOCIATED END ITEMS								
Hull/Structure								
Maintenance and Repair								
Alteration (Installation)								
Conversion (Installation)								
Restricted/Technical Availabilities								
Other								
Propulsion Plants								
Maintenance and Repair								
Alteration (Installation)								
Conversion (Installation)								
Restricted/Technical Availabilities								
Other								
Other Equipment								
Maintenance and Repair								
Alteration (Installation)								
Conversion (Installation)								
Restricted/Technical Availabilities								
Other								
Total Ships and Associated End Items								
MISSILES								
Maintenance and Repair								
Modification (Installation)								
Other								
Total Missiles								
CONSTRUCTION/AUTOMOTIVE EQUIPMENT								
Maintenance and Repair								
Other								
Total Construction/Automotive Equipment								
ELECTRONIC AND COMMUNICATION SYSTEMS								
Maintenance and Repair								
Modification (Installation)								
Other								
Total Electronic and Communication Systems								
EXPENDABLE ORDNANCE AND MUNITIONS								
Ammunition Maintenance and Repair								
Torpedoes								
Maintenance and Repair								
Modification (Installation)								
Mines/Depth Charges Maintenance and Repair								
Bombs Maintenance and Repair								
All Other Expendable Ordnance and Munitions								
Maintenance and Repair								
Total Expendable Ordnance and Munitions								
ALL OTHER EQUIPMENT MAINTENANCE AND REPAIR								
ALL OTHER DEPOT MAINTENANCE ACTIVITIES								
Manufacture and Assembly								
Other Depot Maintenance Workload								
Total All Other Depot Maintenance Activities								
GRAND TOTAL, WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES								

Figure DA-1E. DETAILED DEPOT LEVEL MAINTENANCE RESOURCES BY SUB-FUNCTIONS: MANPOWER, MATERIAL, OTHER, AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78-84

Logistic Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
INVESTMENT IN LOGISTIC SUPPORT HARDWARE - VALUE					
Initial Spares					
Peculiar					
Common					
Replenishment Spares					
Peculiar					
Common					
War Reserve Stocks					
Peculiar Spares					
Common Spares					
Munitions					
Support Equipment and Data					
Total Investment in Logistic Support Hardware - Value					
INVESTMENT IN MODIFICATION/ALTERATION/CONVERSION KITS - Value					
Aircraft Modifications					
Operational Safety Improvement					
Service Life Extension					
Conversion in Lieu of Procurement					
Fleet Modernization Program					
Ship Alterations					
Technical Improvement Program					
Military Improvement Program					
Ordnance Alterations					
Technical Improvement Program					
Military Improvement Program					
Missile Modifications					
Operational Safety Improvements					
Improved Operational Capability					
Torpedo Modifications					
Operational Safety Improvements					
Improved Operational Capability					
Ship Conversions					
Total Investment in Modification/Alteration/Conversion Kits - Value					
INVESTMENT IN MATERIAL SUPPORT FACILITIES AND EQUIPMENT					
Organization Level					
Intermediate Level					
Depot Level					
Total Investment in Material Support Facilities and Equipment					
SUPPLY ACTIVITIES					
Organization Level					
Intermediate Level					
Land-Based Overseas Supply Depot					
Storage and Warehousing					
Stock Control					
Overall Support					
Sea-Based					
Storage and Warehousing					
Stock Control					
Depot Level					
Storage and Warehousing					
Traffic Management					
Overall Support					
Total Supply Activities					
CENTRAL INVENTORY CONTROL POINT OPERATIONS					
Stock Control					
Cataloging					
Item Management					
Support Services					
Total Central Inventory Control Point Operations					
PETROLEUM, OIL AND LUBRICANTS - VALUE					
Aircraft					
Ships					
All Other Equipment					
Total Petroleum, Oil and Lubricants - Value					
STOCK-FUNDED MATERIAL (NON-ADD) - VALUE					
Aircraft					
Ships					
All Other Equipment					
Total Stock-Funded Material (NON-ADD) - Value					
GRAND TOTAL, MATERIAL SUPPORT RESOURCES					

Figure DA-2. DETAILED MATERIAL SUPPORT RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
TRANSPORTATION					
Investment in Transportation Related Facilities and Equipment - Value					
Second Destination Transportation - Value					
Sealift (MSC)					
Airlift (MAC)					
Commercial Carrier					
Base Transportation					
TOTAL TRANSPORTATION					

Figure DA-3. DETAILED TRANSPORTATION RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Sub-Functions	Navy Programs				All Other Programs			
	Organic Facilities		Commercial Facilities	Total	Organic Facilities		Commercial Facilities	Total
	NIF	Non-NIF			NIF	Non-NIF		
AIRCRAFT AND ASSOCIATED END-ITEMS								
SHIPS AND ASSOCIATED END-ITEMS								
MISSILES								
EXPENDABLE ORDNANCE AND MUNITIONS								
ALL OTHER EQUIPMENT								
TOTAL ENGINEERING SUPPORT								

Figure DA-4. DETAILED ENGINEERING SUPPORT RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, TYPE OF FACILITY PROVIDING SERVICE (ORGANIC--NIF AND NON-NIF--COMMERCIAL), FY 78

Logistic Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
NAVMAT					
NAVAIR					
NAVSEA					
NAVELEX					
NAVFAC					
NAVSUP					
SSPO					
TOTAL LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION					

Figure DA-5. DETAILED LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES					
Naval Petroleum Reserves					
Administration					
Development Engineering					
Industrial Preparedness					
Planning					
Industrial Base Support					
Production Facilities and Equipment					
Maintenance Facilities and Equipment					
Printing Plants and Laundries					
Central Logistic Training Activities					
All Other Activities					
TOTAL MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES					

Figure DA-6. DETAILED MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES RESOURCES BY SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Sub-Functions	Support of Navy Programs				Support of Family Housing Programs		Support of Inter-service Programs		Total	
	Direct Navy Appropriations		Reserve Navy Appropriations							
	NIF	Non-NIF	NIF	Non-NIF	NIF	Non-NIF	NIF	Non-NIF	NIF	Non-NIF
INVESTMENT IN INSTALLATION SUPPORT FACILITIES AND EQUIPMENT - VALUE										
Equipment										
Facilities										
Total Investment in Installation Support Facilities and Equipment - Value										
COMMAND AND ADMINISTRATION										
REAL PROPERTY MAINTENANCE ACTIVITIES										
Maintenance and Repair of Real Property										
Operation of Utilities										
All Other Activities										
Total Real Property Maintenance Activities										
BASE SERVICES										
Maintenance										
Supply										
Transportation (NON-ADD)										
Medical and Dental Clinics										
All Other Services										
Total Base Services										
BASE COMMUNICATIONS										
SUPPORT OF R&D APPROPRIATION FINANCED ACTIVITIES										
GRAND TOTAL, INSTALLATION SUPPORT										

Figure DA-7. DETAILED INSTALLATION SUPPORT RESOURCES BY SUB-FUNCTIONS: DOLLARS (NIF AND NON-NIF) TO SUPPORT NAVY (BY NAVY AND RESERVE NAVY APPROPRIATIONS), FAMILY HOUSING AND OTHER MILITARY SERVICES PROGRAMS, FY 78

Logistic Functions and Sub-Functions	FY-78 Navy Appropriations	FY-78 Reserve Navy Appropriations	FY-78 Total Navy Programs	→	FY-84 Navy Appropriations	FY-84 Reserve Navy Appropriations	FY-84 Total Navy Programs
LOGISTIC RELATED RESEARCH AND DEVELOPMENT							
MAINTENANCE							
Organization Level							
Aircraft and Associated End Items							
Ships and Associated End Items							
Missiles							
Expendable Ordnance and Munitions							
All Other Material Categories							
Intermediate Level							
Aircraft and Associated End Items							
Ships and Associated End Items							
Missiles							
Expendable Ordnance and Munitions							
All Other Material Categories							
Depot Level							
Aircraft and Associated End Items							
Ships and Associated End Items							
Missiles							
Expendable Ordnance and Munitions							
Investment in Maintenance Related Facilities and Equipment - Value							
Organization Level							
Intermediate Level							
Depot Level							
Total Maintenance							
MATERIAL SUPPORT							
Investment in Logistic Support Hardware - Value							
Initial Spares							
Peculiar							
Common							
Replenishment Spares							
Peculiar							
Common							
War Reserve Stocks							
Peculiar Spares							
Common Spares							
Munitions							
Investment in Modification/Alteration/Conversion kits - Value							
Aircraft Modification							
Fleet Modernization Programs							
Missile Modifications							
Torpedo Modifications							
All Other Modifications							
Ship Conversions							
Investment in Material Support Facilities and Equipment - Value							
Organization Level							
Intermediate Level							
Depot Level							
Supply Activities							
Organization Level							
Intermediate Level							
Storage and Warehousing							
Stock Control							
All Other							
Depot Level							
Storage and Warehousing							
Traffic Management							
Overall Support							
Central Inventory Control Point Operations							
Stock Control							
Item Management							
All Other							
Central Procurement Operations							
Procurement Operations							
Contract Administration							
Total Material Support							
TRANSPORTATION							
Investment in Transportation Related Facilities and Equipment - Value							
Second Destination Transportation							
SEALIFT (MSC)							
AIRLIFT (MAC)							
Commercial Carrier							
Base Transportation							
Total Transportation							
ENGINEERING SUPPORT							
Aircraft							
Ships							
Missiles							
Expendable Ordnance and Munitions							
All Other Material Categories							
Total Engineering Support							
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION							
NAVMAT							
NAVAIR							
NAVSEA							
NAVELEX							
NAVFAC							
NAVSUP							
SSPO							
Total Logistic Headquarters Command and Administration							
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES							
Naval Petroleum Reserves							
Administration							
Development Engineering							
Industrial Preparedness							
Planning							
Industrial Base Support							
Printing Plants and Laundries							
Central Logistic Training Activities							
All Other Activities							
Total Miscellaneous Logistic Support Activities							
INSTALLATION SUPPORT							
Investment in Installation Support Facilities and Equipment - Value							
Command and Administration							
Real Property Maintenance Activities							
Maintenance and Repair of Real Property							
Operation of Utilities							
All Other Activities							
Base Services							
Maintenance							
Supply							
Transportation (NON-ADD)							
Medical and Dental Clinics							
Other							
Base Communications							
Support of R&D Appropriation Financed Activities							
Total Installation Support							
GRAND TOTAL, SUPPORT OF NAVY PROGRAMS							

Figure DB-1. LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF NAVY PROGRAMS BY FUNCTIONS AND SUB-FUNCTIONS: TOTAL DOLLARS, NAVY AND RESERVE NAVY APPROPRIATIONS, FY 78-84

Logistic Functions and Sub-Functions	FY-78									FY-84							
	Security Assistance Programs			Navy Support of Interservice Programs				Other Non-Navy Programs	Total All Other Programs	Security Assistance Programs			Navy Support of Interservice Programs				Other Non-Navy Programs	Total All Other Programs
	FMS	MAP	Total	ARMY	AIR FORCE	MARINE CORPS	Total			FMS	MAP	Total	ARMY	AIR FORCE	MARINE CORPS	Total		
LOGISTIC RELATED RESEARCH AND DEVELOPMENT																		
MAINTENANCE																		
Organization Level																		
Aircraft and Associated End Items																		
Ships and Associated End Items																		
Missiles																		
Expendable Ordnance and Munitions																		
All Other Material Categories																		
Intermediate Level																		
Aircraft and Associated End Items																		
Ships and Associated End Items																		
Missiles																		
Expendable Ordnance and Munitions																		
All Other Material Categories																		
Depot Level																		
Aircraft and Associated End Items																		
Ships and Associated End Items																		
Missiles																		
Expendable Ordnance and Munitions																		
All Other Equipment																		
Total Maintenance																		
MATERIAL SUPPORT																		
Supply Activities																		
Organization Level																		
Intermediate Level																		
Storage and Warehousing																		
Stock Control																		
All Other																		
Depot Level																		
Storage and Warehousing																		
All Other																		
Central Inventory Control Point Operations																		
Stock Control																		
Item Management																		
All Other																		
Central Procurement Operations																		
Procurement Operations																		
Contract Administration																		
Total Material Support																		
TRANSPORTATION																		
Base Transportation																		
ENGINEERING SUPPORT																		
Aircraft																		
Ships																		
Missiles																		
Expendable Ordnance and Munitions																		
All Other Material Categories																		
Total Engineering Support																		
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																		
Aircraft																		
Ships																		
Missiles																		
Expendable Ordnance and Munitions																		
All Other Equipment																		
Total Inactive Equipment Disposal, Storage and Maintenance																		
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION																		
NAVMAT																		
NAVAIR																		
NAVSEA																		
NAVELEX																		
NAVFAC																		
NAVSUP																		
SSPO																		
Total Logistic Headquarters Command and Administration																		
MISCELLEANEOUS LOGISTIC SUPPORT ACTIVITIES																		
Naval Petroleum Reserves																		
Administration																		
Development Engineering																		
Industrial Preparedness																		
Planning																		
Industrial Base Support																		
Printing Plants and Laundries																		
Central Logistic Training Activities																		
All Other Activities																		
Total Miscellaneous Logistic Support Activities																		
INSTALLATION SUPPORT																		
Command and Administration																		
Real Property Maintenance Activities																		
Maintenance and Repair of Real Property																		
Operation of Utilities																		
All Other Activities																		
Base Services																		
Maintenance																		
Supply																		
Transportation (NON-ADD)																		
Medical and Dental Clinics																		
All Other Services																		
Base Communications																		
Support of R&D Appropriation Financed Activities																		
Total Installation Support																		
GRAND TOTAL, SUPPORT OF ALL OTHER PROGRAMS																		

Figure DB-2. NAVY LOGISTIC RESOURCES ALLOCATED TO SUPPORT OF ALL OTHER PROGRAMS BY FUNCTIONS AND SUB-FUNCTIONS: DOLLARS FOR SUPPORT OF SECURITY ASSISTANCE (FMS, MAP AND TOTAL), OTHER MILITARY SERVICES (ARMY, AIR FORCE, MARINE CORPS AND TOTAL) AND OTHER ACTIVITIES, FY 78-84

Logistic Sub-Functions	Navy Programs			All Other Programs		
	Equipment	Installation	Total	Equipment	Installation	Total
MODIFICATION OF AIRCRAFT AND ASSOCIATED END ITEMS						
Operational Safety Improvement						
Investment for Kits - Value (NON-ADD)						
Installation						
Service Life Extension						
Investment for Kits - Value (NON-ADD)						
Installation						
Conversion in Lieu of Procurement						
Investment for Kits - Value (NON-ADD)						
Installation						
Total Modification of Aircraft and Associated End Items						
FLEET MODERNIZATION PROGRAM						
Ship Alterations						
Technical Improvement Program						
Investment for Kits - Value (NON-ADD)						
Installation						
Military Improvement Program						
Investment for Kits - Value (NON-ADD)						
Installation						
Ordnance Alterations						
Technical Improvement Program						
Investment for Kits - Value (NON-ADD)						
Installation						
Military Improvement Program						
Investment for Kits - Value (NON-ADD)						
Installation						
Total Fleet Modernization Program						
SHIP CONVERSION PROGRAM						
Investment for Kits - Value (NON-ADD)						
Installation						
Total Ship Conversion Program						
MISSILE MODIFICATIONS						
Operational Safety Improvement						
Investment for Kits - Value (NON-ADD)						
Installation						
Improved Operational Capability						
Investment for Kits - Value (NON-ADD)						
Installation						
Total Missile Modifications						
TORPEDO MODIFICATIONS						
Operational Safety Improvement						
Investment for Kits - Value (NON-ADD)						
Installation						
Improved Operational Capability						
Investment for Kits - Value (NON-ADD)						
Installation						
Total Torpedo Modifications						
ALL OTHER MODIFICATIONS						
Investment for Kits - Value (NON-ADD)						
Installation						
Total All Other Modifications						
TOTAL PROGRAM						
Investment for Kits - Value (NON-ADD)						
Installation						
GRAND TOTAL, MODIFICATIONS AND ALTERATIONS						

Figure DB-3. MODIFICATION AND ALTERATION PROGRAMS BY TYPE AND MATERIAL CATEGORY: DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS - EQUIPMENT (KIT), INSTALLATION AND TOTAL COST, FY 78

Logistic Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
AIRCRAFT AND ASSOCIATED END ITEMS Investment for Initial Spares Investment for Replenishment Spares Reparable Rework					
Total Aircraft and Associated End Items					
SHIPS AND ASSOCIATED END ITEMS Investment for Initial Spares Investment for Replenishment Spares Reparable Rework					
Total Ships and Associated End Items					
MISSILES Investment for Initial Spares Investment for Replenishment Spares Reparable Rework					
Total Missiles					
ALL OTHER MATERIAL CATEGORIES Investment for Initial Spares Investment for Replenishment Spares Reparable Rework					
Total All Other Material Categories					
TOTAL PROGRAM Investment for Initial Spares Investment for Replenishment Spares Reparable Rework					
GRAND TOTAL, PROVISION OF SPARE PARTS SUPPORT					

Figure DB-4. PROVISION OF SPARE PARTS SUPPORT BY MATERIAL CATEGORY AND SUB-FUNCTIONS (REPAIR OF EXCHANGEABLES AND INVESTMENT FOR SPARES): DOLLARS TO SUPPORT NAVY AND ALL OTHER PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	FY-78 Navy Programs	→	FY-84 Navy Programs
MAINTENANCE			
Organization Level			
Equipment			
Facilities			
Total Organization Level			
Intermediate Level			
Equipment			
Facilities			
Total Intermediate Level			
Depot Level			
Equipment			
Facilities			
Total Depot Level			
Total Maintenance			
MATERIAL SUPPORT			
Organization Level			
Equipment			
Facilities			
Total Organization Level			
Intermediate Level			
Equipment			
Facilities			
Total Intermediate Level			
Depot Level			
Equipment			
Facilities			
Total Depot Level			
Total Material Support			
TRANSPORTATION			
Equipment			
Facilities			
Total Transportation			
INSTALLATION SUPPORT			
Equipment			
Facilities			
Total Installation Support			
TOTAL PROGRAM			
Equipment			
Facilities			
GRAND TOTAL, INVESTMENT IN LOGISTIC SUPPORT FACILITIES AND EQUIPMENT			

Figure DB-5. INVESTMENT IN LOGISTIC SUPPORT FACILITIES AND EQUIPMENT: DOLLARS TO SUPPORT NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	FY-78				→	FY-84			
	Interservice Support of Navy Programs				→	Interservice Support of Navy Programs			
	Army	Air Force	Marine Corps	Total	→	Army	Air Force	Marine Corps	Total
MAINTENANCE									
Depot Level Maintenance									
Aircraft and Associated End Items									
Airframe									
Maintenance and Repair									
Modification (Installation)									
Other									
Engine									
Maintenance and Repair									
Modification (Installation)									
Other									
Components and Accessories									
Maintenance and Repair									
Modification (Installation)									
Other									
Other Equipment									
Maintenance and Repair									
All Other									
Total Aircraft and Associated End Items									
Ships and Associated End Items									
Other Equipment (Components and Accessories)									
Maintenance and Repair									
Total Ships and Associated End Items									
Missiles									
Maintenance and Repair									
Modification (Installation)									
Other									
Total Missiles									
Construction/Automotive Equipment									
Maintenance and Repair									
Other									
Total Construction/Automotive Equipment									
Electronic and Communication Systems									
Maintenance and Repair									
Modification (Installation)									
Other									
Total Electronic and Communication Systems									
Expendable Ordnance and Munitions									
Ammunition Maintenance and Repair									
Torpedoes Maintenance and Repair									
Mines/Depth Charges Maintenance and Repair									
Bombs Maintenance and Repair									
All Other Expendable Ordnance and Munitions									
Maintenance and Repair									
Total Expendable Ordnance and Munitions									
All Other Equipment Maintenance and Repair									
Other Depot Maintenance and Repair									
Manufacture and Assembly									
Other Depot Maintenance Workload									
Total All Other Equipment Maintenance and Repair									
Total Depot Level Maintenance									
INSTALLATION SUPPORT									
Command and Administration									
Real Property Maintenance Activities									
Maintenance and Repair of Real Property									
Operation of Utilities									
All Other Activities									
Base Services									
Maintenance									
Supply									
Transportation (NON-ADD)									
Medical and Dental Clinics									
All Other									
Base Communications									
Support of R&D Appropriation Financed Activities									
Total Installation Support									
GRAND TOTAL, NAVY DOLLARS TO PURCHASE INTERSERVICE SUPPORT									

Figure DB-6. LOGISTIC SUPPORT OF NAVY PROGRAMS BY OTHER MILITARY SERVICES BY FUNCTIONS AND SUB-FUNCTIONS. DOLLARS TO PURCHASE SERVICES FROM ARMY, AIR FORCE, AND MARINE CORPS ACTIVITIES, FY 78-84

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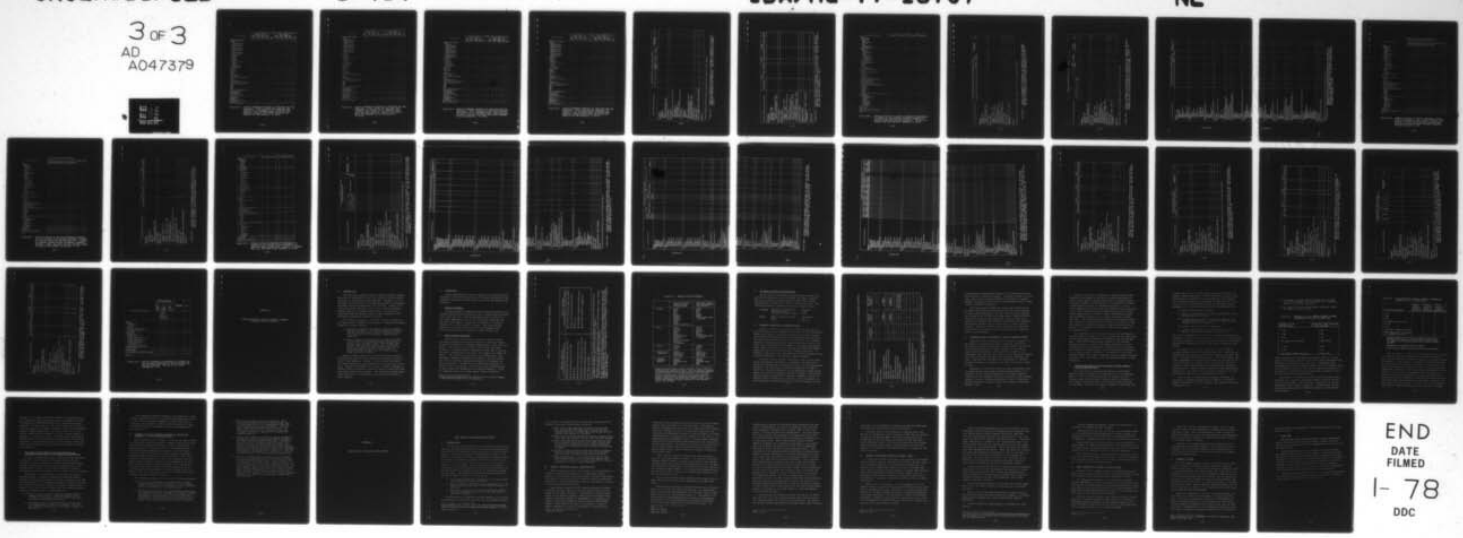

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Logistic Functions and Sub-Functions	FY-78 Manpower (End-Strength) For Navy Organic Facilities										FY-84 Manpower (End-Strength) For Navy Organic Facilities									
	Support of Navy Programs		Support of Programs For Other Mil Services		Support of Security Assistance Programs		Support of Other Programs		Total		Support of Navy Programs		Support of Programs For Other Mil Services		Sppport of Security Assistance Programs		Support of Other Programs		Total	
	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF
LOGISTIC RELATED RESEARCH AND DEVELOPMENT																				
MAINTENANCE																				
Organization Level																				
Aircraft and Associated End Items																				
Ships and Associated End Items																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Material Categories																				
Intermediate Level																				
Aircraft and Associated End Items																				
Ships and Associated End Items																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Material Categories																				
Depot Level																				
Aircraft and Associated End Items																				
Ships and Associated End Items																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Equipment																				
Total Maintenance																				
MATERIAL SUPPORT																				
Supply Activities																				
Organization Level																				
Intermediate Level																				
Depot Level																				
Central Inventory Control Point Operations																				
Stock Control																				
Item Management																				
All Other																				
Central Procurement Operations																				
Procurement Operations																				
Contract Administration																				
Total Material Support																				
TRANSPORTATION																				
Base Transportation																				
ENGINEERING SUPPORT																				
Aircraft																				
Ships																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Equipment																				
Total Engineering Support																				
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																				
Aircraft																				
Ships																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Equipment																				
Total Inactive Equipment Disposal, Storage and Maintenance																				
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION																				
NAVMAT																				
NAVAIR																				
NAVSEA																				
NAVELEX																				
NAVFAC																				
NAVSUP																				
SSPO																				
Total Logistic Headquarters Command and Administration																				
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES																				
Naval Petroleum Reserves																				
Industrial Preparedness																				
Printing Plants and Laundries																				
Central Logistic Training Activities																				
All Other Activities																				
Total Miscellaneous Logistic Support Activities																				
INSTALLATION SUPPORT																				
Command and Administration																				
Real Property Maintenance Activities																				
Base Services																				
Base Communications																				
Support of R&D Appropriation Financed Activities																				
Total Installation Support																				
GRAND TOTAL, LOGISTIC MILITARY MANPOWER																				

Figure M-1. LOGISTIC MANPOWER RESOURCES BY FUNCTIONS AND SUB-FUNCTIONS: TOTAL MILITARY END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84

Logistic Functions and Sub-Functions	FY-78 Manpower (End-Strength) for Navy Organic facilities										FY-84 Manpower (End-Strength) for Navy Organic facilities									
	Support of Navy Programs		Support of Programs For Other Mil Services		Support of Security Assistance Programs		Support of Other Programs		Total		Support of Navy Programs		Support of Programs For Other Mil Services		Support of Security Assistance Programs		Support of Other Programs		Total	
	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF
LOGISTIC RELATED RESEARCH AND DEVELOPMENT																				
MAINTENANCE																				
Organization Level																				
Aircraft and Associated End Items																				
Ships and Associated End Items																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Material Categories																				
Intermediate Level																				
Aircraft and Associated End Items																				
Ships and Associated End Items																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Material Categories																				
Depot Level																				
Aircraft and Associated End Items																				
Ships and Associated End Items																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Equipment																				
Total Maintenance																				
MATERIAL SUPPORT																				
Supply Activities																				
Organization Level																				
Intermediate Level																				
Depot Level																				
Central Inventory Control Point Operations																				
Stock Control																				
Item Management																				
All Other																				
Central Procurement Operations																				
Procurement Operations																				
Contract Administration																				
Total Material Support																				
TRANSPORTATION																				
Base Transportation																				
ENGINEERING SUPPORT																				
Aircraft																				
Ships																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Equipment																				
Total Engineering Support																				
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																				
Aircraft																				
Ships																				
Missiles																				
Expendable Ordnance and Munitions																				
All Other Equipment																				
Total Inactive Equipment Disposal, Storage and Maintenance																				
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION																				
NAVMAT																				
NAVAIR																				
NAVSEA																				
NAVELEX																				
NAVFAC																				
NAVSUP																				
SSPO																				
Total Logistic Headquarters Command and Administration																				
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES																				
Naval Petroleum Reserves																				
Industrial Preparedness																				
Printing Plants and Laundries																				
Central Logistic Training Activities																				
All Other Activities																				
Total Miscellaneous Logistic Support Activities																				
INSTALLATION SUPPORT																				
Command and Administration																				
Real Property Maintenance Activities																				
Base Services																				
Base Communications																				
Support of R&D Appropriation Financed Activities																				
Total Installation Support																				
GRAND TOTAL, LOGISTIC MILITARY MANPOWER																				

Figure M-2. LOGISTIC MANPOWER RESOURCES BY FUNCTIONS AND SUB-FUNCTIONS: TOTAL ACTIVE DUTY MILITARY END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84

Logistic Functions and Sub-Functions	FY-78 Manpower (End-Strength) for Navy Organic Facilities					→	FY-84 Manpower (End-Strength) For Navy Organic Facilities				
	Support of Navy Programs	Support of Programs For Other Mil Services	Support of Security Assistance Programs	Support of Other Programs	Total	→	Support of Navy Programs	Support of Programs For Other Mil Services	Support of Security Assistance Programs	Support of Other Programs	Total
	NON-NIF	NON-NIF	NON-NIF	NON-NIF	NON-NIF	→	NON-NIF	NON-NIF	NON-NIF	NON-NIF	NON-NIF
LOGISTIC RELATED RESEARCH AND DEVELOPMENT											
MAINTENANCE											
Organization Level											
Aircraft and Associated End Items											
Ships and Associated End Items											
Missiles											
Expendable Ordnance and Munitions											
All Other Material Categories											
Intermediate Level											
Aircraft and Associated End Items											
Ships and Associated End Items											
Missiles											
Expendable Ordnance and Munitions											
All Other Material Categories											
Depot Level											
Aircraft and Associated End Items											
Ships and Associated End Items											
Missiles											
Expendable Ordnance and Munitions											
All Other Equipment											
Total Maintenance											
MATERIAL SUPPORT											
Supply Activities											
Organization Level											
Intermediate Level											
Depot Level											
Central Procurement Operations											
Procurement Operations											
Contract Administration											
Total Material Support											
TRANSPORTATION											
Base Transportation											
ENGINEERING SUPPORT											
Aircraft											
Ships											
Missiles											
Expendable Ordnance and Munitions											
All Other Equipment											
Total Engineering Support											
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE											
Aircraft											
Ships											
Missiles											
Expendable Ordnance and Munitions											
All Other Equipment											
Total Inactive Equipment Disposal, Storage and Maintenance											
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION											
NAVMAT											
NAVAIR											
NAVSEA											
NAVELEX											
NAVFAC											
NAVSUP											
SSPO											
Total Logistic Headquarters Command and Administration											
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES											
Naval Petroleum Reserves											
Industrial Preparedness											
Printing Plants and Laundries											
Central Logistic Training Activities											
All Other Activities											
Total Miscellaneous Logistic Support Activities											
INSTALLATION SUPPORT											
Command and Administration											
Real Property Maintenance Activities											
Base Services											
Base Communications											
Support of R&D Appropriation Financed Activities											
Total Installation Support											
GRAND TOTAL, LOGISTIC MILITARY MANPOWER											

Figure M-3. LOGISTIC MANPOWER RESOURCES BY FUNCTIONS AND SUB-FUNCTIONS: TOTAL RESERVE MILITARY END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84

Logistic Functions and Sub-Functions	FY-78 Manpower (End-Strength) For Navy Organic Facilities										→	FY-84 Manpower (End-Strength) For Navy Organic Facilities									
	Support of Navy Programs		Support of Programs For Other Mil Services		Support of Security Assistance Programs		Support of Other Programs		Total		→	Support of Navy Programs		Support of Programs For Other Mil Services		Support of Security Assistance Programs		Support of Other Programs		Total	
	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	→	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF	NIF	NON NIF
LOGISTIC RELATED RESEARCH AND DEVELOPMENT																					
MAINTENANCE																					
Organization Level																					
Aircraft and Associated End Items																					
Ships and Associated End Items																					
Missiles																					
Expendable Ordnance and Munitions																					
All Other Material Categories																					
Intermediate Level																					
Aircraft and Associated End Items																					
Ships and Associated End Items																					
Missiles																					
Expendable Ordnance and Munitions																					
All Other Material Categories																					
Depot Level																					
Aircraft and Associated End Items																					
Ships and Associated End Items																					
Missiles																					
Expendable Ordnance and Munitions																					
All Other Equipment																					
Total Maintenance																					
MATERIAL SUPPORT																					
Supply Activities																					
Organization Level																					
Intermediate Level																					
Depot Level																					
Central Inventory Control Point Operations																					
Stock Control																					
Item Management																					
All Other																					
Central Procurement Operations																					
Procurement Operations																					
Contract Administration																					
Total Material Support																					
TRANSPORTATION																					
Base Transportation																					
ENGINEERING SUPPORT																					
Aircraft																					
Ships																					
Missiles																					
Expendable Ordnance and Munitions																					
All Other Equipment																					
Total Engineering Support																					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																					
Aircraft																					
Ships																					
Missiles																					
Expendable Ordnance and Munitions																					
All Other Equipment																					
Total Inactive Equipment Disposal, Storage and Maintenance																					
LOGISTIC HEADQUARTERS COMMAND AND ADMINISTRATION																					
NAVMAT																					
NAVAIR																					
NAVSEA																					
NAVELEX																					
NAVFAC																					
NAVSUP																					
SSPO																					
Total Logistic Headquarters Command and Administration																					
MISCELLANEOUS LOGISTIC SUPPORT ACTIVITIES																					
Naval Petroleum Reserves																					
Industrial Preparedness																					
Printing Plants and Laundries																					
Central Logistic Training Activities																					
All Other Activities																					
Total Miscellaneous Logistic Support Activities																					
INSTALLATION SUPPORT																					
Command and Administration																					
Real Property Maintenance Activities																					
Base Services																					
Base Communications																					
Support of R&D Appropriation Financed Activities																					
Total Installation Support																					
GRAND TOTAL, LOGISTIC MILITARY MANPOWER																					

Figure M-4. LOGISTIC MANPOWER RESOURCES BY FUNCTIONS AND SUB-FUNCTIONS: TOTAL CIVILIAN END-STRENGTHS FOR SUPPORT OF ALL PROGRAMS (NAVY, OTHER MILITARY SERVICES, SECURITY ASSISTANCE AND OTHER PROGRAMS BY NIF AND NON-NIF), FY 78-84

Logistic Functions and Sub-Functions	Resources Attributable to Specific Material Categories						Resources Not Attributable[1]	Total
	Aircraft	Ships	Missiles	Expendable Ordnance & Munitions	All Other Categories	Total Attributable		
MAINTENANCE								
Organization								
Intermediate								
Depot								
Investment in Maintenance Related Facilities and Equipment - Value								
Total Maintenance								
MATERIAL SUPPORT								
Investment in Logistic Support Hardware - Value								
Initial Spares								
Replenishment Spares								
War Reserve Stocks								
Support Equipment and Data								
Investment in Modification/Alteration/Conversion Kits - Value								
Supply Activities								
Organization								
Intermediate								
Depot								
Central Inventory Control Point Operations								
Central Procurement Operations								
Petroleum, Oil and Lubricants - Value								
Stock-Funded Material (NON-ADD) - Value								
Total Material Support								
ENGINEERING SUPPORT								
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE								
GRAND TOTAL								

[1]Resources contained in the logistic functions displayed that are not attributable to material categories.

Figure W-1. LOGISTIC RESOURCES ATTRIBUTABLE TO EQUIPMENT SUPPORTED BY SELECTED FUNCTIONS AND MAJOR SUB-FUNCTIONS: DOLLARS BY MATERIAL CATEGORY, FY 78

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MAINTENANCE Organization Level Intermediate Level Depot Level Investment in Maintenance Related Facilities and Equipment - Value					
Total Maintenance					
MATERIAL SUPPORT Investment in Logistic Support Hardware - Value Investment in Aircraft Modification Kits - Value Investment in Material Support Facilities and Equipment - Value Supply Activities (Organization and Intermediate Only) Petroleum, Oil and Lubricants - Value Stock-Funded Material (NON-ADD) - Value					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WA-1. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MAINTENANCE					
Maintenance and Repair					
Organization Level					
Intermediate Level					
Airframe					
Engine					
Component and Accessories					
Other Equipment					
Depot					
Airframe					
Engine					
Components and Accessories					
Other Equipment					
Total Maintenance and Repair					
Modification					
Intermediate Level					
Airframe					
Installation					
Kits - Value (NON-ADD)					
Depot Level					
Airframe					
Installation					
Kits - Value (NON-ADD)					
Engine					
Installation					
Kits-Value (NON-ADD)					
Components and Accessories					
Installation					
Kits - Value (NON-ADD)					
Total Modification					
All Other Work Performance Categories					
Intermediate Level					
Airframe					
Depot Level					
Airframe					
Engine					
Components and Accessories					
Other Equipment					
Total All Other Work Performance Categories					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Initial Spares					
Peculiar					
Common					
Replenishment Spares					
Peculiar					
Common					
Support Equipment and Data					
Total Investment in Logistic Support Hardware - Value					
Investment in Aircraft Modification Kits - Value					
Operational Safety Improvement					
Service Life Extension					
Conversion in Lieu of Procurement					
Total Investment in Aircraft Modification Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Organization Level					
Equipment					
Facilities					
Intermediate Level					
Equipment					
Facilities					
Depot Level					
Equipment					
Facilities					
Total Investment in Material Support Facilities and Equipment - Value					
Supply Activities					
Organization Level					
Intermediate Level					
Land-Based Overseas Supply Depots					
Storage and Warehousing					
Stock Control					
Overall Support					
Sea-Based					
Storage and Warehousing					
Stock Control					
Depot Level					
Storage and Warehousing					
Traffic Management					
Overall Support					
Total Supply Activities					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WA-2. DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	Resources Attributable to Specific Aircraft Weapon System Categories								Resources Not Attributable[1]	Total
	Fighters	Attack	ASW	Patrol	Trainers	Rotary	All Other Categories	Total Attributable		
MAINTENANCE Organization Level Intermediate Level Depot Level Investment in Maintenance Related Facilities and Equipment - Value										
Total Maintenance										
MATERIAL SUPPORT Investment in Logistic Support Hardware - Value Investment in Aircraft Modification Kits - Value Investment in Material Support Facilities and Equipment - Value Supply Activities (Organization and Intermediate Only) Petroleum, Oil and Lubricants - Value Stock-Funded Material (NON-ADD) - Value										
Total Material Support										
ENGINEERING SUPPORT										
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE										
GRAND TOTAL										

[1]Resources attributable to the Aircraft Material Category but not to specific aircraft weapon system categories.

Figure WA-3. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, FY 78

Logistic Functions and Sub-Functions	Resources Attributable to Specific Fighter Aircraft									Resources Not Attributable[1]	Total
	F-4					F-14	F-18	Total All Other Fighters	Total Attributable		
	F-4J	F-4N	F-4S	Other	Total All F-4s						
MAINTENANCE											
Organization Level											
Intermediate Level											
Depot Level											
Investment in Maintenance Related Facilities and Equipment - Value											
Total Maintenance											
MATERIAL SUPPORT											
Investment in Logistic Support Hardware - Value											
Investment in Aircraft Modification Kits - Value											
Investment in Material Support Facilities and Equipment - Value											
Supply Activities (Organization and Intermediate Only)											
Petroleum, Oil and Lubricants - Value											
Stock-Funded Material (NON-ADD) - Value											
Total Material Support											
ENGINEERING SUPPORT											
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE											
GRAND TOTAL											

[1]Resources attributable to the Fighter Weapon System Category but not to specific aircraft by T/M/S.

Figure WA-4. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT SPECIFIC FIGHTER AIRCRAFT WEAPON SYSTEMS, FY 78

Logistic Functions and Sub-Functions	Resources Attributable to Specific Aircraft Weapon System Categories								Resources Not Attributable[1]	Total
	Fighters	Attack	ASW	Patrol	Trainers	Rotary	All Other Categories	Total Attributable		
MAINTENANCE										
Maintenance and Repair										
Organization Level										
Intermediate Level										
Airframe										
Engine										
Component and Accessories										
Other Equipment										
Depot Level										
Airframe										
Engine										
Components and Accessories										
Other Equipment										
Total Maintenance and Repair										
Modification										
Intermediate Level										
Airframe										
Installation										
Kits-Value (NON-ADD)										
Depot Level										
Airframe										
Installation										
Kits-Value (NON-ADD)										
Engine										
Installation										
Kits - Value (NON-ADD)										
Components and Accessories										
Installation										
Kits-Value (NON-ADD)										
Total Modification										
All Other Work Performance Categories										
Intermediate Level										
Airframe										
Depot Level										
Airframe										
Engine										
Components and Accessories										
Other Equipment										
Total All Other Work Performance Categories										
Total Maintenance										
MATERIAL SUPPORT										
Investment in Logistic Support Hardware - Value										
Initial Spares										
Peculiar										
Common										
Replenishment Spares										
Peculiar										
Common										
Support Equipment and Data										
Total Investment in Logistic Support Hardware - Value										
Investment in Aircraft Modification Kits - Value										
Operational Safety Improvement										
Service Life Extension										
Conversion in Lieu of Procurement										
Total Investment in Aircraft Modification Kits - Value										
Investment in Material Support Facilities and Equipment - Value										
Organization Level										
Equipment										
Facilities										
Intermediate Level										
Equipment										
Facilities										
Depot Level										
Equipment										
Facilities										
Total Investment in Material Support Facilities and Equipment - Value										
Supply Activities										
Organization Level										
Intermediate Level										
Land-Based Overseas Supply Depots										
Storage and Warehousing										
Stock Control										
Overall Support										
Sea-Based										
Storage and Warehousing										
Stock Control										

Installation Kits - Value (NON-ADD) Components and Accessories Installation Kits-Value (NON-ADD)										
Total Modification										
All Other Work Performance Categories Intermediate Level Airframe Depot Level Airframe Engine Components and Accessories Other Equipment										
Total All Other Work Performance Categories										
Total Maintenance										
MATERIAL SUPPORT Investment in Logistic Support Hardware - Value Initial Spares Peculiar Common Replenishment Spares Peculiar Common Support Equipment and Data										
Total Investment in Logistic Support Hardware - Value										
Investment in Aircraft Modification Kits - Value Operational Safety Improvement Service Life Extension Conversion in Lieu of Procurement										
Total Investment in Aircraft Modification Kits - Value										
Investment in Material Support Facilities and Equipment - Value Organization Level Equipment Facilities Intermediate Level Equipment Facilities Depot Level Equipment Facilities										
Total Investment in Material Support Facilities and Equipment - Value										
Supply Activities Organization Level Intermediate Level Land-Based Overseas Supply Depots Storage and Warehousing Stock Control Overall Support Sea-Based Storage and Warehousing Stock Control Depot Level Storage and Warehousing Traffic Management Overall Support										
Total Supply Activities										
Total Material Support										
ENGINEERING SUPPORT										
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE										
GRAND TOTAL										

[1]Resources attributable to the Aircraft Material Category but not to specific aircraft weapon system categories

Figure WA-5. DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, FY 78

Logistic Functions and Sub-Functions	Resources Attributable to Specific Aircraft Weapon System Categories																												Resources Not Attributable	Total Resources
	Fighters				Attack				ASW				Patrol				Trainers				All Other				Total					
	Organic	Contract	Interservice	Total	Organic	Contract	Interservice	Total	Organic	Contract	Interservice	Total	Organic	Contract	Interservice	Total	Organic	Contract	Interservice	Total	Organic	Contract	Interservice	Total	Organic	Contract	Interservice	Total		
MAINTENANCE																														
Maintenance and Repair																														
Organization Level																														
Intermediate Level																														
Airframe																														
Engine																														
Component and Accessories																														
Other Equipment																														
Depot Level																														
Airframe																														
Engine																														
Components and Accessories																														
Other Equipment																														
Total Maintenance and Repair																														
Modification																														
Intermediate Level																														
Airframe																														
Installation																														
Kits - Value (NON-ADD)																														
Depot Level																														
Airframe																														
Installation																														
Kits - Value (NON-ADD)																														
Engine																														
Installation																														
Kits - Value (NON-ADD)																														
Components and Accessories																														
Installation																														
Kits - Value (NON-ADD)																														
Total Modification																														
All Other Work Performance Categories																														
Intermediate Level																														
Airframe																														
Depot Level																														
Airframe																														
Engine																														
Components and Accessories																														
Other Equipment																														
Total All Other Work Performance Categories																														
Total Maintenance																														
MATERIAL SUPPORT																														
Investment in Logistic Support Hardware - Value																														
Initial Spares																														
Peculiar																														
Common																														
Replenishment Spares																														
Peculiar																														
Common																														
Support Equipment and Data																														
Total Investment in Logistic Support Hardware - Value																														
Investment in Aircraft Modification Kits - Value																														
Operational Safety Improvement																														
Service Life Extension																														
Conversion in Lieu of Procurement																														
Total Investment in Aircraft Modification Kits - Value																														
Investment in Material Support Facilities and Equipment - Value																														
Organization Level																														
Equipment																														
Facilities																														
Intermediate Level																														
Equipment																														
Facilities																														
Depot Level																														
Equipment																														
Facilities																														
Total Investment in Material Support Facilities and Equipment - Value																														
Supply Activities																														
Organization Level																														
Intermediate Level																														
Land-Based Overseas Supply Depots																														
Storage and Warehousing																														
Stock Control																														
Overall Support																														
Sea-Based																														
Storage and Warehousing																														
Stock Control																														
Depot Level																														
Storage and Warehousing																														
Traffic Management																														
Overall Support																														
Total Supply Activities																														
Total Material Support																														
ENGINEERING SUPPORT																														
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																														
GRAND TOTAL																														

Figure WA-6. DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, TYPE OF FACILITY, FY 78

Logistic Functions and Sub-Functions	Resources Attributable to Specific Aircraft Weapon System Categories																								Resources Not Attributable	Total Resources
	Fighters				Attack				ASW				Patrol				Trainers				All Other				Total			
	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total		
MAINTENANCE																														
Maintenance and Repair																														
Organization Level																														
Intermediate Level																														
Airframe																														
Engine																														
Component and Accessories																														
Other Equipment																														
Depot																														
Airframe																														
Engine																														
Components and Accessories																														
Other Equipment																														
Total Maintenance and Repair																														
Modification																														
Intermediate Level																														
Airframe																														
Installation																														
Kits - Value (NON-ADD)																														
Depot Level																														
Airframe																														
Installation																														
Kits - Value (NON-ADD)																														
Engine																														
Installation																														
Kits - Value (NON-ADD)																														
Components and Accessories																														
Installation																														
Kits - Value (NON-ADD)																														
Total Modification																														
All Other Work Performance Categories																														
Intermediate Level																														
Airframe																														
Depot Level																														
Airframe																														
Engine																														
Components and Accessories																														
Other Equipment																														
Total All Other Work Performance Categories																														
Total Maintenance																														
MATERIAL SUPPORT																														
Investment in Logistic Support Hardware - Value																														
Initial Spares																														
Peculiar																														
Common																														
Replenishment Spares																														
Peculiar																														
Common																														
Support Equipment and Data																														
Total Investment in Logistic Support Hardware - Value																														
Investment in Aircraft Modification Kits - Value																														
Operational Safety Improvement																														
Service Life Extension																														
Conversion in Lieu of Procurement																														
Total Investment in Aircraft Modification Kits - Value																														
Investment in Material Support Facilities and Equipment - Value																														
Organization Level																														
Equipment																														
Facilities																														
Intermediate Level																														
Equipment																														
Facilities																														
Depot Level																														
Equipment																														
Facilities																														
Total Investment in Material Support Facilities and Equipment - Value																														
Supply Activities																														
Organization Level																														
Intermediate Level																														
Land-Based Overseas Supply Depots																														
Storage and Warehousing																														
Stock Control																														
Overall Support																														
Sea-Based																														
Storage and Warehousing																														
Stock Control																														
Depot Level																														
Storage and Warehousing																														
Traffic Management																														
Overall Support																														
Total Supply Activities																														
Total Material Support																														
ENGINEERING SUPPORT																														
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE																														
GRAND TOTAL																														

Figure WA-7. DETAILED DISPLAY OF LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE AIRCRAFT MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY AIRCRAFT WEAPON SYSTEMS CATEGORIES, MANPOWER, MATERIAL, OTHER, AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs		Navy Programs	All Other Programs
MAINTENANCE					
Organization Level					
Intermediate Level					
Depot Level					
Investment In Maintenance Related Facilities and Equipment - Value					
Total Maintenance					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Investment in Alteration Kits - Value					
Investment in Conversion Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Supply Activities (Organization and Intermediate Only)					
Petroleum, Oil and Lubricants - Value					
Stock-Funded Material (NON-ADD) - Value					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WB-1. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE SHIP MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MAINTENANCE					
Maintenance and Repair					
Organization Level					
Intermediate Level					
Hull/Structure					
Propulsion Plant					
Other Equipment					
Depot Level					
Hull/Structure					
Propulsion Plant					
Other Equipment					
Total Maintenance and Repair					
Alteration and Conversion					
Intermediate Level					
Hull/Structure					
Installation					
Kits - Value (NON-ADD)					
Propulsion Plant					
Installation					
Kits - Value (NON-ADD)					
Other Equipment					
Installation					
Kits - Value (NON-ADD)					
Depot Level					
Hull/Structure					
Installation					
Kits - Value (NON-ADD)					
Propulsion Plant					
Installation					
Kits - Value (NON-ADD)					
Other Equipment					
Installation					
Kits - Value (NON-ADD)					
Total Alteration and Conversion					
All Other Work Performance Categories					
Intermediate Level					
Hull/Structure					
Propulsion Plant					
Other Equipment					
Depot Level					
Hull/Structure					
Propulsion Plant					
Other					
Total All Other Work Performance Categories					
Total Maintenance					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Initial Spares					
Peculiar					
Common					
Replenishment Spares					
Peculiar					
Common					
Support Equipment and Data					
Total Investment in Logistic Support Hardware - Value					
Investment in Modification Kits - Value					
Operational Safety Improvement					
Service Life Extension					
Conversion in Lieu of Procurement					
Total Investment in Modification Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Organization Level					
Equipment					
Facilities					
Intermediate Level					
Equipment					
Facilities					
Depot Level					
Equipment					
Facilities					
Total Investment in Material Support Facilities and Equipment - Value					
Supply Activities					
Organization Level					
Intermediate Level					
Land-Based Overseas Supply Depots					
Storage and Warehousing					
Stock Control					
Overall Support					
Sea-Based					
Storage and Warehousing					
Stock Control					
Depot Level					
Storage and Warehousing					
Traffic Management					
Overall Support					
Total Supply Activities					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WB-2. DETAILED LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF SHIP WEAPON SYSTEMS CATEGORIES BY FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY, ALL OTHER AND TOTAL PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	Resources Attributable to Specific Ship Weapon System Categories								Resources Not Attributable[1]	Total
	Carriers	Cruisers	Destroyers	Frigates	FBMS	Submarines	All Other Categories	Total Attributable		
MAINTENANCE										
Organization Level										
Intermediate Level										
Depot Level										
Investment in Maintenance Related Facilities and Equipment - Value										
Total Maintenance										
MATERIAL SUPPORT										
Investment in Logistic Support Hardware - Value										
Investment in Alteration Kits - Value										
Investment in Conversion Kits - Value										
Investment in Material Support Facilities and Equipment - Value										
Supply Activities (Organization and Intermediate Only)										
Petroleum, Oil and Lubricants - Value										
Stock-Funded Material (NON-ADD) - Value										
Total Material Support										
ENGINEERING SUPPORT										
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE										
GRAND TOTAL										

[1]Resources attributed to the Ship Weapon Category but not to specific ship weapon system categories.

Figure WB-3. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE SHIP MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY SHIP WEAPON SYSTEMS CATEGORIES, FY 78

Logistic Functions and Sub-Functions	Resources Attributable to Specific Ship Weapon System Categories							Resources Not Attributable[1]	Total
	Carriers	Cruisers	Destroyers	FBMS	Submarines	All Other	Total Attributable		
MAINTENANCE									
Maintenance and Repair									
Organization Level									
Intermediate Level									
Hull/Structure									
Propulsion Plant									
Other Equipment									
Depot Level									
Hull/Structure									
Propulsion Plant									
Other Equipment									
Total Maintenance and Repair									
Alteration									
Intermediate Level									
Hull/Structure									
Installation									
Kits-Value (NON-ADD)									
Propulsion Plant									
Installation									
Kits-Value (NON-ADD)									
Other Equipment									
Installation									
Kits-Value (NON-ADD)									
Depot Level									
Hull/Structure									
Installation									
Kits-Value (NON-ADD)									
Propulsion Plant									
Installation									
Kits-Value (NON-ADD)									
Other Equipment									
Installation									
Kits-Value (NON-ADD)									
Total Alteration									
Conversion									
Intermediate Level									
Hull/Structure									
Installation									
Kits-Value (NON-ADD)									
Propulsion Plant									
Installation									
Kits-Value (NON-ADD)									
Other Equipment									
Installation									
Kits-Value (NON-ADD)									
Depot Level									
Hull/Structure									
Installation									
Kits-Value (NON-ADD)									
Propulsion Plant									
Installation									
Kits-Value (NON-ADD)									
Other Equipment									
Installation									
Kits-Value (NON-ADD)									
Total Conversion									
All Other Work Performance Categories									
Intermediate Level									
Hull/Structure									
Propulsion Plant									
Other Equipment									
Depot Level									
Hull/Structure									
Propulsion Plant									
Other									
Total All Other Work Performance Categories									
Total Maintenance									
MATERIAL SUPPORT									

Intermediate Level Hull/Structure Propulsion Plant Other Equipment Depot Level Hull/Structure Propulsion Plant Other									
Total All Other Work Performance Categories									
Total Maintenance									
MATERIAL SUPPORT Investment in Support Hardware - Value Initial Spares Peculiar Common Replenishment Spares Peculiar Common Support Equipment and Data									
Total Investment in Support Hardware - Value									
Investment in Alteration/Conversion Kits - Value Technical Improvement Program Alterations Military Improvement Program Alterations Ship Conversion Program									
Total Investment in Alteration/Conversion Kits - Value									
Investment in Material Support in Facilities and Equipment - Value Organization Level Equipment Facilities Intermediate Level Equipment Facilities Depot Level Equipment Facilities									
Total Investment in Material Support in Facilities and Equipment - Value									
Supply Activities Organization Level Intermediate Level Land-Based Overseas Supply Depots Storage and Warehousing Stock Control Overall Support Sea-Based Storage and Warehousing Stock Control Depot Level Storage and Warehousing Traffic Management Overall Support									
Total Supply Activities									
Total Material Support									
ENGINEERING SUPPORT									
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE									
GRAND TOTAL									

[1]Resources attributed to the Ship Weapon Category but not to specific ship weapon system categories.

Figure WB-5. DETAILED LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF SHIP WEAPON SYSTEMS CATEGORIES BY FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY SHIP WEAPON SYSTEMS CATEGORIES, FY 78

Logistic Functions and Sub-Functions	Resources Attributable to Specific Ship Weapon System Categories															Total Non-Attributable	Total
	Carriers							Cruisers									
	Organic Navy Facilities				Commercial Facilities	Interservice Facilities	Total	Organic Navy Facilities				Commercial Facilities	Interservice Facilities	Total	Total Attributable		
	Shipyard	SRF	Other	Total				Shipyard	SRF	Other	Total						
MAINTENANCE																	
Maintenance and Repair																	
Organization Level																	
Intermediate Level																	
Hull/Structure																	
Propulsion Plant																	
Other Equipment																	
Depot Level																	
Hull/Structure																	
Propulsion Plant																	
Other Equipment																	
Total Maintenance and Repair																	
Alteration																	
Intermediate Level																	
Hull/Structure																	
Installation																	
Kits - Value (NON-ADD)																	
Propulsion Plant																	
Installation																	
Kits - Value (NON-ADD)																	
Other Equipment																	
Installation																	
Kits - Value (NON-ADD)																	
Depot Level																	
Hull/Structure																	
Installation																	
Kits - Value (NON-ADD)																	
Propulsion																	
Installation																	
Kits - Value (NON-ADD)																	
Other Equipment																	
Installation																	
Kits - Value (NON-ADD)																	
Total Alteration																	
Conversion																	
Intermediate Level																	
Hull/Structure																	
Installation																	
Kits - Value (NON-ADD)																	
Propulsion Plant																	
Installation																	
Kits - Value (NON-ADD)																	
Other Equipment																	
Installation																	
Kits - Value (NON-ADD)																	
Depot Level																	
Hull/Structure																	
Installation																	
Kits - Value (NON-ADD)																	
Propulsion Plant																	
Installation																	
Kits - Value (NON-ADD)																	
Other Equipment																	
Installation																	
Kits - Value (NON-ADD)																	
Total Conversion																	
All Other Work Performance Categories																	
Intermediate Level																	
Hull/Structure																	
Propulsion Plant																	
Other Equipment																	
Depot Level																	
Hull/Structure																	
Propulsion Plant																	
Other																	
Total All Other Work Performance Categories																	
Total Maintenance																	
MATERIAL SUPPORT																	
Investment in Logistic Support Hardware - Value																	
Initial Spares																	
Peculiar																	
Common																	
Replenishment Spares																	
Peculiar																	
Common																	
Support Equipment and Data																	
Total Investment in Logistic Support Hardware - Value																	
Investment in Alteration/Conversion Kits - Value																	
Technical Improvement Program Alterations																	
Military Improvement Program Alterations																	
Ship Conversion Program																	
Total Investment in Alteration/Conversion Kits - Value																	
Investment in Material Support Facilities and Equipment - Value																	

Kits - Value (NON-ADD)
Propulsion Plant
Installation
Kits - Value (NON-ADD)
Other Equipment
Installation
Kits - Value (NON-ADD)
Total Conversion
All Other Work Performance Categories
Intermediate Level
Hull/Structure
Propulsion Plant
Other Equipment
Depot Level
Hull/Structure
Propulsion Plant
Other
Total All Other Work Performance Categories
Total Maintenance
MATERIAL SUPPORT
Investment in Logistic Support Hardware - Value
Initial Spares
Peculiar
Common
Replenishment Spares
Peculiar
Common
Support Equipment and Data
Total Investment in Logistic Support Hardware - Value
Investment in Alteration/Conversion Kits - Value
Technical Improvement Program Alterations
Military Improvement Program Alterations
Ship Conversion Program
Total Investment in Alteration/Conversion Kits - Value
Investment in Material Support Facilities and Equipment - Value
Organization Level
Equipment
Facilities
Intermediate Level
Equipment
Facilities
Depot Level
Equipment
Facilities
Total Investment in Material Support Facilities and Equipment - Value
Supply Activities
Organization Level
Intermediate Level
Land-Based Overseas Supply Depots
Storage and Warehousing
Stock Control
Overall Support
Sea-Based
Storage and Warehousing
Stock Control
Depot Level
Storage and Warehousing
Traffic Management
Overall Support
Total Supply Activities
Total Material Support
ENGINEERING SUPPORT
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE
GRAND TOTAL

Figure WB-6. DETAILED LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF SHIP WEAPON SYSTEMS CATEGORIES BY FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY SHIP WEAPON SYSTEM CATEGORIES, TYPE OF FACILITY, FY 78

Logistic Functions and Sub-Functions	Cost Detail for Work Accomplished in Navy Organic Facilities																															
	Carriers				Cruisers				Destroyers				Frigates				FBMS				Submarines				Amphibious				→	All Other				Total			
	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	Manpower	Material	Other	Total	→	Manpower	Material	Other	Total	Manpower	Material	Other	Total
MAINTENANCE																																				
Maintenance and Repair																																				
Organization Level																																				
Intermediate Level																																				
Hull/Structure																																				
Propulsion Plant																																				
Other Equipment																																				
Depot Level																																				
Hull/Structure																																				
Propulsion Plant																																				
Other Equipment																																				
Total Maintenance and Repair																																				
Alteration																																				
Intermediate Level																																				
Hull/Structure																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Propulsion Plant																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Other Equipment																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Depot Level																																				
Hull/Structure																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Propulsion Plant																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Other Equipment																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Total Alteration																																				
Conversion																																				
Intermediate Level																																				
Hull/Structure																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Propulsion Plant																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Other Equipment																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Depot Level																																				
Hull/Structure																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Propulsion Plant																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Other Equipment																																				
Installation																																				
Kits - Value (NON-ADD)																																				
Total Conversion																																				
All Other Work Performance Categories																																				
Intermediate Level																																				
Hull/Structure																																				
Propulsion Plant																																				
Other Equipment																																				
Depot Level																																				
Hull/Structure																																				
Propulsion Plant																																				
Other																																				
Total All Other Work Performance Categories																																				
Total Maintenance																																				
MATERIAL SUPPORT																																				
Investment in Logistic Support Hardware - Value																																				
Initial Spares																																				

Kits - Value (NON-ADD)
Propulsion Plant
Installation
Kits - Value (NON-ADD)
Other Equipment
Installation
Kits - Value (NON-ADD)
Total Conversion
All Other Work Performance Categories
Intermediate Level
Hull/Structure
Propulsion Plant
Other Equipment
Depot Level
Hull/Structure
Propulsion Plant
Other
Total All Other Work Performance Categories
Total Maintenance
MATERIAL SUPPORT
Investment in Logistic Support Hardware - Value
Initial Spares
Peculiar
Common
Replenishment Spares
Peculiar
Common
Support Equipment and Data
Total Investment in Logistic Support Hardware - Value
Investment in Alteration/Conversion Kits - Value
Technical Improvement Program Alterations
Military Improvement Program Alterations
Ship Conversion Program
Total Investment in Alteration/Conversion Kits - Value
Investment in Material Support Facilities and Equipment - Value
Organization Level
Equipment
Facilities
Intermediate Level
Equipment
Facilities
Depot Level
Equipment
Facilities
Total Investment in Material Support Facilities and Equipment - Value
Supply Activities
Organization Level
Intermediate Level
Land-Based Overseas Supply Depots
Storage and Warehousing
Stock Control
Overall Support
Sea-Based
Storage and Warehousing
Stock Control
Depot Level
Storage and Warehousing
Traffic Management
Overall Support
Total Supply Activities
Total Material Support
ENGINEERING SUPPORT
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE
GRAND TOTAL

Figure WB-7. DETAILED LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF SHIP WEAPON SYSTEMS CATEGORIES BY FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY SHIP WEAPON SYSTEMS CATEGORIES, MANPOWER, MATERIAL, OTHER, AND TOTAL DOLLARS FOR WORK ACCOMPLISHED IN NAVY ORGANIC FACILITIES, FY 78

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MAINTENANCE					
Organization Level					
Intermediate Level					
Depot Level					
Investment in Maintenance Related Facilities and Equipment - Value					
Total Maintenance					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Investment in Modification Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Supply Activities (Organization and Intermediate Only)					
Petroleum, Oil and Lubricants - Value					
Stock-Funded Material (NON-ADD) - Value					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WC-1. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE MISSILE MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	Resources Attributable to Specific Missile Weapon System Categories				Resources Not Attributable[1]	Total
	Strategic	Tactical	Other	Total		
MAINTENANCE						
Organization Level						
Intermediate Level						
Depot Level						
Investment in Maintenance Related Facilities and Equipment - Value						
Total Maintenance						
MATERIAL SUPPORT						
Investment in Logistic Support Hardware - Value						
Investment in Modification Kits - Value						
Investment in Material Support Facilities and Equipment - Value						
Supply Activities (Organization and Intermediate Only)						
Petroleum, Oil and Lubricants - Value						
Stock-Funded Material (NON-ADD) - Value						
Total Material Support						
ENGINEERING SUPPORT						
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE						
GRAND TOTAL						

[1]Resources attributed to the Missile Material Category but not to specific missile weapon systems categories.

Figure WC-3. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE MISSILE MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY MISSILE WEAPON SYSTEMS CATEGORIES, FY 78

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MAINTENANCE					
Organization Level					
Intermediate Level					
Depot Level					
Investment in Maintenance Related Facilities and Equipment - Value					
Total Maintenance					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Investment in Modification Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Supply Activities (Organization and Intermediate Only)					
Petroleum, Oil and Lubricants - Value					
Stock-Funded Material (NON-ADD) - Value					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WD-1. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE ORDNANCE AND MUNITIONS CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	Resources Attributable to Specific Expendable Ordnance and Munitions Categories						Resources Not Attributable[1]	Total
	Ammunition	Torpedoes	Mines/ Depth Charges	Bombs	All Other	Total		
MAINTENANCE								
Organization Level								
Intermediate Level								
Depot Level								
Investment in Maintenance Related Facilities and Equipment - Value								
Total Maintenance								
MATERIAL SUPPORT								
Investment in Logistic Support Hardware - Value								
Investment in Modification Kits - Value								
Investment in Material Support Facilities and Equipment - Value								
Supply Activities (Organization and Intermediate Only)								
Petroleum, Oil and Lubricants - Value								
Stock-Funded Material (NON-ADD) - Value								
Total Material Support								
ENGINEERING SUPPORT								
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE								
GRAND TOTAL								

[1]Resources attributed to the Expendable Ordnance and Munitions Category but *not* to specific ordnance and munitions systems categories.

Figure WD-3. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE ORDNANCE AND MUNITIONS CATEGORIES BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY ORDNANCE AND MUNITIONS SYSTEMS CATEGORIES, FY 78

Logistic Functions and Sub-Functions	FY-78		→	FY-84	
	Navy Programs	All Other Programs	→	Navy Programs	All Other Programs
MAINTENANCE					
Organization Level					
Intermediate Level					
Depot Level					
Investment in Maintenance Related Facilities and Equipment - Value					
Total Maintenance					
MATERIAL SUPPORT					
Investment in Logistic Support Hardware - Value					
Investment in Modification Kits - Value					
Investment in Material Support Facilities and Equipment - Value					
Supply Activities (Organization and Intermediate Only)					
Petroleum, Oil and Lubricants - Value					
Stock-Funded Material (NON-ADD) - Value					
Total Material Support					
ENGINEERING SUPPORT					
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE					
GRAND TOTAL					

Figure WE-1. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE ALL OTHER MATERIAL CATEGORY BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS TO SUPPORT NAVY AND NON-NAVY PROGRAMS, FY 78-84

Logistic Functions and Sub-Functions	Resources Attributable to Specific Material Categories								Resources Not Attributable	Total
	Construction/ Automotive Equipment	Electronic and Communication Systems					All Other Equipment	Total		
		Strategic	General Purpose	Surveillance	Other	Total				
MAINTENANCE										
Organization Level										
Intermediate Level										
Depot Level										
Investment in Maintenance Related *Facilities and Equipment - Value*										
Total Maintenance										
MATERIAL SUPPORT										
Investment in Logistic Support Hardware - Value										
Investment in Modification Kits - Value										
Investment in Material Support Facilities and Equipment - Value										
Supply Activities (Organization and Intermediate Only)										
Petroleum, Oil and Lubricants - Value										
Stock-Funded Material (NON-ADD) - Value										
Total Material Support										
ENGINEERING SUPPORT										
INACTIVE EQUIPMENT DISPOSAL, STORAGE AND MAINTENANCE										
GRAND TOTAL										

Figure WE-3. LOGISTIC RESOURCES ATTRIBUTABLE TO SUPPORT OF THE ALL OTHER CATEGORIES BY SELECTED FUNCTIONS AND SUB-FUNCTIONS: DOLLARS BY ALL OTHER CATEGORIES, FY 78

APPENDIX D

IDENTIFICATION OF LOGISTIC SUPPORT RESOURCES TO WEAPON SYSTEMS SUPPORTED

A. INTRODUCTION

The task order requires that all relevant logistic support resources be identified, by specific logistic function and sub-function, to the weapon systems supported. Appendix C of the IDA Paper P-1194 describes a preliminary approach to incorporating weapon system considerations into the LRA. Chapter VI of P-1194 identifies this area as one of the critical potential problem areas to be resolved during Phase II, and asks for additional OASD/I&L guidance based on their analyses of the alternative approaches outlined in P-1194.

The OASD/I&L response to the Phase I Report includes the following specific guidance with respect to identifying logistic resources to weapon systems.

(1) Resources within the Maintenance, Material Support, Engineering Support, and Inactive Equipment Disposal Storage and Maintenance logistic function are the only resources to be associated to weapon system supported.

(2) Data by weapon system should be routinely displayed on LRA formats in aggregated weapon systems categories (e.g., Fighter, Attack, ASW, aircraft categories; Carriers, FBMS, Patrol, ship categories). However, the Navy data base should be able to produce, upon request, logistic support data for specific weapon systems [e.g., aircraft by type, model, and series (T/M/S)].

The preliminary approach to incorporating weapon system considerations into the LRA described in P-1194 was revised to reflect this guidance. Chapter II of this report describes how weapon system data are accommodated by the data base structure. Chapter III describes the series of formats designed to display logistic resources in terms of weapon systems supported and logistic functions performed. This appendix provides additional discussion to substantiate the approach described in those chapters.

B. TERMINOLOGY

Before discussing the issue of how best to provide improved visibility of the Navy's allocation of logistic resources to the equipment supported, several terms basic to the IDA approach are clarified.

1. Material Category

IDA has adopted an equipment-oriented grouping based on the DoD-prescribed material categories used in various DoD directives (e.g., DODI 4151.15). The IDA groupings, shown in Table D-1, are direct aggregations of the DoD categories, therefore, the DoD definitions apply. Each piece of equipment is uniquely assigned to a single material category. The seven material categories in the data base structure are aggregated even more for routine display purposes as shown in Table D-1.

2. Weapon System Categories

Within each of the material categories, weapon systems-oriented groupings have been established to facilitate identification of resources to equipment supported at a lower level of detail. The first level of detail (for aircraft and ships referred to as weapon system categories) is the same as used by the Navy in summarizing forces (see, for example, the SASDT and SNAP[1]). For the missile, electronic and communication, and expendable ordnance and munitions categories, various sources are used to establish aggregated categories for equipment in these categories. The LRA data base identifies resources in terms of all of the groups. For routine display purposes some of these groups are aggregated into larger categories. Table D-2 summarizes the use of these weapon system categories.

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[1]"Ships and Aircraft Supplemental Data Tables," 9 Jan 76, and the "Summary of Navy Approved Program," 9 Jan 76, respectively.

Table D-1. EQUIPMENT-ORIENTED MATERIAL CATEGORIES

Material Categories In the LRA Data Base Structure[1]	Material Category Groupings Used in the LRA Formats[2]
• Aircraft and Associated End-Items	• Aircraft and Associated End-Items
• Ships and Associated End-Items	• Ships and Associated End-Items
• Missiles	• Missiles
• Construction/Automotive Equipment	• Expendable Ordnance and Munitions
• Electronic and Communication Systems	• All Other Material Categories[3]
• Expendable Ordnance and Munitions	
• All Other Equipment	

[1]All resources allocated to the performance of designated logistic function (See Table D-3) are identified in the LRA data base to one of these material categories.

[2]These groups are used in the appropriate LRA formats to display selected logistic support resources in terms of the equipment and weapon system supported.

[3]Includes the Constructive/Automotive Equipment, Electronic and Communication Systems, and All Other Equipment material categories. These three material categories, although used in the LRA data base to identify resources in terms of equipment supported, are generally displayed in a single, aggregated category in the LRA formats.

Table D-2. WEAPON SYSTEM CATEGORIES

	Weapon System Categories Included in the LRA Data Base Structure	Weapon System Categories Used to Display Resources in the LRA Formats
1. Aircraft	Fighters Attack ASW Patrol Warning Transports Refuelers Observation Utility Trainers Rotary Drones and Non-Program	Fighters Attack ASW Patrol Trainers Rotary All Other Weapon System Categories[1]
2. Ships	Carriers Cruisers Destroyers Frigates FBMS *Submarines* Amphibious Warfare Mine Warfare Patrol Underway Replenishment Auxiliary All Other Craft	Carriers Cruisers Destroyers Frigates FBMS *Submarines* All Other Weapon System Categories[2]
3. Missiles	Strategic Tactical Other	Strategic Tactical Other
4. Electronics and Communications	Strategic General Purpose Surveillance Other Systems	Strategic General Purpose Surveillance Other Systems
5. Expendable Ordnance and Munitions	Ammunition Torpedoes Mines/Depth Charges Bombs Other	Ammunition Torpedoes Mines/Depth Charges Bombs Other

[1]Includes the Warning, Transports, Refueler, Observation, Utility, and Drones and Non-Program aircraft weapon system categories. These six categories, although used in the LRA data base to identify resources in terms of aircraft systems supported, are generally displayed in a single, aggregated category in the LRA formats.

[2]Includes the Amphibious Warfare, Mine Warfare, Patrol, Underway Replenishment, Auxiliary, and All Other Craft ship weapon system categories. These six categories, although used in the LRA data base to identify resources in terms of the ship systems supported, are generally displayed in a single, aggregated category in the LRA formats.

3. Aircraft and Ship Classifications

Within each of the aircraft and ship weapon system categories, two additional levels of detail are used to discuss the level at which resources should be identified. These classification levels are the same as used by the Navy. The following examples illustrate how various terms are used.

Aircraft	Weapon Systems Category	:	Fighters
	Type/Model (T/M)	:	F-4
	Type/Model/Series (T/M/S)	:	F-4J
Ships	Weapon Systems Category	:	Destroyers
	Type	:	DD
	Class	:	DD-963

C. RESOURCES IDENTIFIED TO WEAPON SYSTEMS

Based on directions received from OASD/I&L, the LRA data base structure has been adjusted so resources in the Maintenance, Engineering Support, and Inactive Equipment Disposal, Storage and Maintenance functions, and in selected major sub-functions in the Material Support function are associated with equipment supported. Within the Material Support function, three of the eight major sub-functions (Investment in Facilities and Equipment, Central Inventory Control Points, and Central Procurement Operations) are not associated with equipment supported. In addition, some lower level sub-functions are not associated with equipment supported in the Material support function.

The detail varies in which resources in each of the designated functions are identified to equipment. The data base structure requires that, in general, resources in the appropriate categories are identified to material categories as shown in Table D-3. Thus, all resources in the Maintenance, Engineering Support and Inactive Equipment Disposal, Storage and Maintenance functions must be identified to material category. Within the Material Support function, all resources in the Investment in the Modification/Alteration/Conversion Kits; Petroleum, Oil and

Table D-3. OVERVIEW OF LOGISTIC RESOURCES ASSOCIATED WITH THE EQUIPMENT SUPPORTED

Logistic Function/Sub-Function	Not Identified To Equipment	Identified To Material Category	Identified To Weapon System Category
Logistic Related Research and Development	X		
Maintenance		X	*
Material Support			
Investment in Support Hardware		Except war reserves	Except war reserves
Investment in MOD/ALT/Conversion Kits		X	*
Investment in Facilities and Equipment	X		
Supply Activities		Except depot level	Except depot level
Central ICP	X		
Central Procurement Operations	X		
Petroleum, Oil and Lubricants		X	Acft & ships only
Stock-Funded Material		X	Acft & ships only
Transportation	X		
Engineering Support		X	*
Inactive Equipment Disposal, Storage and Maintenance		X	
Logistic Headquarters Command and Administration	X		
Miscellaneous Logistic Support Activities	X		
Installation Support	X		

*Aircraft, ship and missile weapon systems only except torpedo depot level maintenance and investment for mod kits will be identified separately. (See Chapter II, Table 3.)

Lubricants; and Stock-Funded Material major sub-functions must be identified to material category. As shown in Table D-3, however, some of the resources within the Investment in Support Hardware and Supply Activities major sub-functions are not identified to material categories.

The final column in Table D-3 shows those sub-functions for which resources are identified to specific weapon systems or weapon system groupings. The data base structure requires that resources in the functions shown must be identified first to specific weapon system categories. Thus, at this point, resources in specific functions are identified to the appropriate material category and, in some cases, to weapon system category. The level at which these resources are identified to specific weapon systems within each category is addressed later in this appendix.

D. IDENTIFICATION OF RESOURCES TO SPECIFIC WEAPON SYSTEMS

OASD/I&L, after reviewing the P-1194 Paper, accepted the IDA concept of requiring the Navy to identify resources in the logistic resource data base to certain weapon systems, and to routinely display all of these resources in the LRA by weapon systems categories. This approach is based on the requirement that the Navy must be able to provide rapid response to follow-on requests for data about selected individual systems. OASD/I&L also reiterated the requirement to identify relevant resources to aircraft at the T/M/S level and to ships by class.

Appendix C of the P-1194 Paper includes preliminary lists of weapon systems that would be analyzed during Phase II to determine the most feasible approach to providing improved visibility of the logistic resources allocated to weapon system support in terms of functions performed. Over 70 type/model aircraft and over 150 ship classes are included in these preliminary lists.

Early in the Phase II analysis, it became apparent that imposing a requirement on the Navy to identify resources to such a large number of systems could not be justified without extensive evaluation of the benefits to be achieved (in terms of improved allocations of available resources). At this point, emphasis was shifted from identifying relevant resources to *all* weapon systems to identifying resources only to those systems and groups of systems for which DoD decisions would have significant impacts on the overall allocation of Navy resources. This issue-oriented approach was designed to minimize the Navy's workload and, at the same time, provide a data base capable of supporting formats designed to improve visibility of the resources allocated to the logistic support of key weapon systems.

The remainder of this section discusses the IDA approach for identifying resources to specific weapon systems within each of the weapon system categories contained in the IDA LRA data base. The fighter weapon system category in the Aircraft Material Category is used to facilitate discussion of basic considerations in developing the required lists. The points made using this single weapon system category apply in general to all other material categories. The problem of selecting the LRA formats to be used to display logistic support resources in terms of the line items in the list developed above is also addressed.

1. Incorporating Detail Below the Weapon System Category into the LRA Data Base

The first step in incorporating detail by individual fighter aircraft systems in the LRA data base is the development of a list of systems and groups of systems to which resources must be identified. Starting with an inventory of all fighter aircraft (by T/M/S for the fiscal years covered in the FYDP), each line item must be analyzed to determine the

systems that are, or are projected to be, major consumers of logistic support resources. Precise criteria to apply to this determination are difficult to establish, but the following list of factors should be considered. Systems that fall into at least one of the following categories represent probable candidates to be identified explicitly in the LRA data base:

(1) major force/inventory systems;

(2) major systems scheduled to become operational in the period covered by the LRA;

(3) systems that are likely to become the subject of a program decision having a signficant impact on Navy logistic resource allocations;

(4) systems that are separately managed;

(5) systems that require unique, high value logistic support facilities, equipment, or services.

All of the remaining T/M/S aircraft are logically grouped into aggregated categories in the LRA data base (e.g., all other F-4's, all other aircraft). The Navy would not be required to identify resources to individual aircraft within these aggregated categories.

The product of the above review is a list of fighter aircraft similar to the list shown in Table D-4. This list is preliminary and illustrates the various groups of aircraft that might be included in the LRA data base. Each T/M/S fighter aircraft programmed to be operated by the Navy is included in one of the categories to account for the total fighter aircraft inventory. Note that resources are identified to aircraft at various levels of detail (T/M/S, T/M, and in other appropriate categories). The actual list of aircraft included in the LRA must be developed prior to implementing the LRA.

Once the list of individual and groups of aircraft is developed, a detailed analysis must be made of the logistic support requirements of each category. This analysis includes consideration of:

(1) the extent to which various aircraft use the same or similar equipment and subsystems (e.g., engines, radios, fire control systems);

(2) the type of facilities and support equipment needed to support various aircraft.

Table D-4. POSSIBLE LIST OF FIGHTER AIRCRAFT SYSTEMS INCORPORATED INTO THE LRA DATA BASE

Category in the LRA Data Base	Individual T/M/S Aircraft in Each Category
F-4J	F-4J
F-4N	F-4N
F-4S	F-4S
All Other F-4 Aircraft	F-4B, RF-4B
F-14 A	F-14A
F-18	F-18
All Other Fighter Aircraft	F-8G, F-5E

These considerations help determine logistic support requirements of the various aircraft in terms of supply inventories and maintenance capabilities and capacities. Expressing these requirements in terms of common, unique, and total resource categories provides a logistic data base to support the analysis of the impacts of aircraft force and inventory adjustments on the overall allocation of Navy resources.

The product of the two-step process described above would establish the coverage of individual fighter aircraft systems in the LRA data base. This coverage is visualized in the two dimensional matrix shown in Table D-5. Intersections of rows and columns establish the information elements in the overall LRA data base.

Table D-5. ILLUSTRATION OF FIGHTER AIRCRAFT INFORMATION ELEMENTS IN THE LRA DATA BASE

Aircraft Groupings	Common Logistic Support Resources[1]	Unique Logistic Support Resources[2]	Total Logistic Support Resources[3]
F-4J			
F-4N			
F-4S			
All Other F-4 Aircraft			
F-14 A			
F-18			
All Other Fighter Aircraft			
Total Resources to Support All Fighter Aircraft			

[1]Includes pro rata cost of logistic support activities and functions that support more than one type of aircraft when the support is not routinely identified to specific aircraft by T/M/S.

[2]Includes cost of dedicated logistic support.

[3]Total logistic support cost for each of the aircraft groups.

This data base is capable of supporting displays of logistic resources that can provide planners improved visibility into the Navy resources consumed in support of fighter aircraft. For example, if the issue to be addressed involves comparison of the total cost to support F-4J versus F-4N aircraft, the total column provides a consistent basis on which to make the comparison. However, if the issue involves an analysis of the extent to which current and programmed Navy maintenance resources can support large numbers of a new aircraft being introduced into the inventory, it becomes more useful to highlight Navy maintenance resources by the extent to which tney can support the new aircraft. In this case, the two columns identified as common and unique in Table D-5 are of primary

interest. For example, if the new series of aircraft uses the same propulsion system as another series, the impact on logistic planning is very different than if a new engine must be supported. In the first case, the Navy already has the capability to support the engine, although in some cases a different number of engines might have to be processed (e.g., the new aircraft series may be assigned to fly an increased number of sorties). In the second case, a new maintenance capability is required which has a significantly greater impact on resource allocation. New training programs, new maintenance lines, new items in the inventory, all have substantial impacts on logistice planning.

2. Selection of LRA Formats to Display Resources by Individual Systems Wihtin Each Weapon System Category

The set of formats discussed in Chapter III and presented in Appendix C that comprise the proposed initial LRA are designed to display resources by logistic function and weapon systems supported at the weapon systems category level only. Included in the series of six formats designed for each of the material category groupings are four formats for that purpose.

In addition, a seventh format is provided that can be a prototype format to display resources by individual weapon systems if OSD elects to display resources routinely in the LRA for those systems. The preferred approach is largely a function of the number of specific systems and groups of systems displayed. Using the series of formats for the aircraft material category as examples, the two approaches are:

(a) Data for specific weapon systems incorporated into Formats WA-3 and WA-5. Under each weapon system category, the specific aircraft by T/M and/or T/M/S prescribed by OSD would be arrayed.

(b) A separate series of charts provided for each category summarized in Formats WA-3 and WA-5. This is the approach illustrated for the fighter category in Format WA-4.

Other approaches based on design of new formats or on some combined approach of the two basic ideas presented above could be used. Once the general approach to format selection is established, the specific aircraft T/M/S categories, as shown in Table D-3, must be prescribed by OSD at the beginning of each PPBS cycle.

D. SUMMARY OF THE IDA PROPOSED APPROACH TO IDENTIFYING RESOURCES TO SPECIFIC WEAPON SYSTEMS

This appendix does not attempt to resolve the dual problems of identifying logistic resources to weapon systems in the data base and of displaying the results in routine LRA formats. A general approach is presented, but it is recommended that a joint OSD and Navy Working Group review the list of weapon systems before selecting the individual systems and groups of systems to which resources are to be identified. This work should be completed prior to levying the requirement for the initial LRA so specific systems to be identified in the data base can be included in the LRA guidance. This list will include not only weapon systems to which resources are to be identified, but also aggregations in which detail is not required. This list will permit the Navy to determine the level at which they will identify resources.

The recommended approach involves the following procedures:

(1) Prior to the beginning of each PPBS cycle, OSD provides the Navy an issue-oriented list of all weapon systems and weapon system groupings to which resources are to be identified in the LRA data base.

(2) Generally, all resources in the Maintenance, Engineering Support and Inactive Equipment Maintenance, Storage and Disposal functions, and five of the eight major sub-functions in the Material Support function will be identified in the LRA data base to the material and weapon system categories shown in Tables D-1 and D-2.

(3) The minimum number of specific systems to which resources are identified in the LRA data base will be prescribed by OSD at the beginning of each PPBS cycle (as described in item one above). The number of additional systems the Navy elects to include in the data base is a function of the level of detail they wish to maintain for internal programming purposes.

(4) Formats that comprise the initial LRA are designed to display resources by functions and weapon systems at the weapon systems category level only. Included in the series of six formats designed for each of the material category groupings, are four formats that display resources for the logistic functions that are identified to weapon systems in terms of the aggregated weapon system categories shown in Table D-2. The Navy will maintain the capability to respond to follow-on requests for data for specific weapon systems detail.

(5) The set of formats used to display logistic support resources is patterned after the illustrative format for the fighter aircraft weapon system category shown in Appendix C (see Format WA-4). The selection of actual formats must follow the development of the list of systems within each category designated by OSD. If this number is small, the current set of four formats (WA-3 and WA-5 through WA-7) could be modified to display resources for designated aircraft within each weapon system category. If the number within individual categories is large, formats similar to Format WA-4 could be used.

APPENDIX E

NAVY SECURITY ASSISTANCE DATA SYSTEMS

NAVY SECURITY ASSISTANCE DATA SYSTEMS

A. INTRODUCTION

The purpose of this appendix is to describe and discuss the existing and planned Navy Security Assistance data systems that support the Navy's Security Assistance portion of the DoD PPBS process. These data systems are considered in terms of their ability to provide the fullest possible range of mutually exclusive logistic information elements relating to Security Assistance for the final IDA logistic data base structure detailed in Chapter II of this Study. Data systems that are dedicated exclusively to Security Assistance as well as data systems that include Security Assistance as part of the total Navy program are addressed. This appendix is properly assessed within the context of Phases I and II of this study as:

(1) the Security Assistance counterpart to the direct Navy data systems discussion in Phase I,[1]

(2) the data systems complement to the presentation of the Navy's Security Assistance institutional structure in Phase I,[2]

(3) the Phase II relation of Security Assistance logistic resource consumption data to the final IDA logistic data base structure.

Specifically, this appendix provides answers to the following questions to the extent that they are not already answered

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[1]John D. Morgan, et al., *A Phase I Report On A Proposed Navy FYDP Logistic Resource Data Base Structure and Associated Resource Displays*, pp. 97-166.

[2]*Ibid*, pp. 167-219.

in the Phase I discussion of direct Navy data systems and the Security Assistance institutional structure.

(1) What are the Navy Security Assistance data systems that support the Navy PPBS, and in particular the resource displays in dollars and civilian and military manpower that appear in the DNFYP?

(2) How is Navy Security Assistance logistic resource data structured and presented in the total Navy PPB systems?

(3) What other Navy Security Assistance data systems that do not provide direct input to the PPBS and are used for planning or managing logistic support resources can be used for developing ideal structure information elements?

(4) Do any of these systems provide functionally oriented logistic support resource data that can be aligned with the final IDA logistic data base structure?

(5) What modifications to existing systems and new data system capabilities would be needed to support the full range of Security Assistance information elements included in the final ideal structure?

B. SECURITY ASSISTANCE UNIQUE CHARACTERISTICS

Before examining specific data systems, it is necessary to review the unique characteristics that make Navy logistic support to the Security Assistance Program different from logistic support to the Direct Navy in order to properly assess the visibility of Security Assistance logistic data and its relation to the final IDA ideal structure.

Navy logistic support to the Security Assistance Program is defined by fewer functions and sub-functions than are contained in the final structure.[1] Specifically, the procurement values in the Material Support function do not represent Navy logistic resources consumed or programmed for consumption in support of Security Assistance because they are FMS and MAP funded. These include the value of investment in logistic support hardware, the value of investments in modification,

[1] *Ibid.*, pp. 168-170.

alteration, and conversion kits, and the value of stock funded material and petroleum, oil, and lubricants. Maintenance Support and Supply Activities are not conducted at the organizational or intermediate levels for Security Assistance, and investments in Maintenance Support, Material Support, and Transportation Support facilities and equipment are not made at the organization or intermediate levels. Finally, Naval Petroleum Reserves and Printing Plants and Laundries are not involved in Security Assistance. The remaining functions and sub-functions in the final logistic data structure represent categories of Navy resources that could be consumed in support of FMS cases and MAP-FMT orders.[1]

There are two sources of monies from which the Navy is paid for providing logistic support to the Security Assistance Program--foreign country customer money obtained from Foreign Military Sales, and congressional appropriations from the Military Assistance Program and the International Military Education and Training Program (IMETP). The congressional appropriations are included as part of Navy Total Obligational Authority, but the FMS receipts are not.

Navy civilian and military personnel may be paid in one of three ways from the FMS receipts deposited to the FMS Trust Fund.[2]

Administrative personnel are identified as such, initially paid out of the MPN and O&MN appropriations on a reimbursable basis, and then the appropriations are reimbursed from the FMS Trust Fund for the actual amounts paid out. The money in the Trust Fund for these administrative personnel reimbursements is collected at a fixed administrative surcharge percentage of the total line item price of each FMS sales case.[3] In

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[1] *Ibid.*, p. 167.

[2] *Ibid.*, pp. 182-187.

[3] *Ibid.*, pp. 208-209.

assessing data systems for capturing these administrative personnel reimbursements, it should be understood that the fixed price percentage surcharge sets an upper limit to the total amount of money available for reimbursements. The total available cannot exceed the surcharge percentage multiplied times the total FMS Trust Fund receipts containing the surcharge over a given time period. Navy International Logistics Office (NAVILO) estimates total surcharge collections for the budget year and provides this estimate to OP-92 (Fiscal Management Division in OP-90, the Navy Program Planning Office). With the advent of the Defense Security Assistance Accounting Center, NAVILO no longer administers or computes administrative costs/collections (this function has been assumed by SAAC). Accordingly, this data has been omitted from MISIL. Navy activities with administrative personnel involved in FMS submit budget estimates of FMS civilian and military personnel to be paid. If the total administrative personnel charge estimate submitted by the activities exceeds the surcharge total, the higher surcharges can be imposed by the DoD Comptroller but the process is lengthy and complex. Any data systems which rely on the activities' reports of FMS surcharge reimbursable administrative personnel will be recording numbers that do not reflect all of the Navy administrative personnel resources consumed in support of FMS, because recent DSAA studies show that the current administrative surcharge is not large enough to cover FMS administrative personnel costs.[1]

Navy civilian and military personnel written up in individual FMS cases on a line item basis have their costs billed to the customer country on a dollar for dollar basis. As long as the Defense Security Assistance Accounting Center (SAAC) collects

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[1] *Ibid.*, p. 210.

the money, it is available to reimburse the MPN and O&MN appropriations that will initially pay the personnel.

Personnel who are not identified as administrative and who are not written up as line items in an FMS case are initially paid out of MPN and O&MN, then these appropriations are reimbursed by directly citing the particular FMS case money in the FMS Trust Fund for the case upon which they are working. These personnel include many of those involved in FMS cases because it is unusual for specified personnel to appear as line items in a case.

C. SECURITY ASSISTANCE DEDICATED SYSTEMS: MISIL

A major Navy Security Assistance data system is the Management Information System, International Logistics (MISIL), which is a new system currently being installed by NAVILO and targeted for full operational capability in early calendar year 1978. MISIL utilizes existing elements of current Navy Security Assistance Data Systems and adds some new capabilities for accumulating FMS and MAP management information, double entry accounting, an automatic transaction holding account, and MASL screening.[1]

MISIL is not a PPB System, it is a management tool that permits NAVILCO to track FMS cases and MAP-FMT orders from their initial implementation until completion. Its basic information element is dollars of goods and services purchased and granted to foreign governments. The usefulness of MISIL for providing information elements in the final IDA logistic data base structure is bounded by the MISIL system's character as a device for tracking goods and services provided.

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[1] *Ibid.*, p. 191.

MISIL can provide manpower data only for central logistic training activities under the IDA logistic data structure function Miscellaneous Logistic Support Activities, when Navy civilian and military personnel are written up on a line item basis and involved in logistic training activities.[1] This manpower capability is limited to line item training cases only because other cases are not usually written up in great detail and input into the MISIL system. Detail does exist at SYSCOM level and subordinate activities. Here, the goods and services are price and availability estimated in order to calculate an initial offer price that is presented to a potential FMS customer. But this detail is not put into the MISIL system. Modification of the system to accept such detail requires a major system redesign and involves considerable expense.

Items that the MISIL system will provide dollar information elements for in the final IDA logistic data structure include depot maintenance, depot level storage and warehousing and overall support, second destination transportation, inactive equipment disposal, storage, and maintenance, and central logistic training activities.

Depot maintenance dollars are available at a highly aggregated level for summary material categories such as aircraft and ships.

Depot level storage and warehousing and overall support are available under the supply operations category in the MISIL system, which includes the costs of maintaining logistic pipelines.

Second destination transportation is available in total dollars.

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[1]An example would be a field training team whose services are purchased in an FMS case and who go to a foreign country to provide training in the operation of a supply activity.

Inactive equipment disposal, storage and maintenance is available by summary material category.

Training activities that are written up as separate cases can be identified by dollar amounts in the MISIL system, but training activities that are included as additional services accompanying a hardware purchase may not be identified separately.

MISIL dollar data for these types of goods and services identifiable to final structure functions and sub-functions are for prior years, current and budget years, and for out-years by proration of the remaining case value not yet expended.

MISIL provides data to the OSD DSAA 1100 Reporting System, which is the OSD FMS tracking data system. No Navy information is in the DSAA system that is not in MISIL, although much that is in MISIL is not in the DSAA system.

D. DNFYP PROGRAM 10, SUPPORT TO OTHER NATIONS

Program 10 of the DNFYP contains two program elements in which the Navy plans to display those Security Assistance Personnel involved in FMS and MAP programs throughout the Navy.

PE 01009N, Service Support to the Military Assistance Program (MAP-IMETP), currently displays Navy military and civilian manpower at MAAGS, Missions, and Military Assistance Groups. Each Navy activity utilizing military or civilian personnel to administer the MAP-IMET program will report those personnel and they will go into the PE manpower display.

PE 02002, Foreign Military Sales Support Personnel (Reimbursable), currently displays a small portion of the Navy's FMS administrative personnel and FMS Training personnel on a line item basis in FMS cases (DD Form 1513).[1] The administrative personnel displayed are in CNET and NAVMAT.

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[1] *Ibid.*, p. 199.

There are no plans to display the dollar costs of these personnel that will be reimbursed to the Navy out of Security Assistance funds. Since the personnel in these two PEs are reported in detail to OP-92 for allocations of the reimbursable funds, it should be feasible to display the manpower dollars on a non-add basis, if desired.

Displays of non-administrative and non-line item case personnel are not presently planned. Such displays could be organized into additional Program 10 PEs for personnel not written up as line items in cases and not paid out of administrative surcharge money.

E. MANPOWER SYSTEMS

The SIDS-SHOROC system contains a currently unused capability to code all Navy mission areas and tasks ashore as Security Assistance.[1] The capability exists as a modifier code to the Required Functional Capabilities (RFC) code that is the vocabulary of the range of tasks performed by shore activities. A prefix modifier establishes that the RFC task is provided by the Navy to a source outside the direct Navy environment, and a suffix modifier identifies the source as foreign. Currently, the suffix is only a single aggregate category foreign, but it would be possible to make it a two category suffix identifying foreign FMS and foreign MAP-IMETP.

Since this capability is part of an existing system, its utilization is a matter of enforcement. As with the direct Navy, the Security Assistance capability of SIDS-SHOROC provides a feasible approach to the development of functionally oriented manpower information that can be input into the FYDP subsystem. Implementation of this capability would go a long way toward providing a functional identification of Security

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[1]OPNAV Instruction 5310.12A, *SHORTSTAMPS*. See Section D, Chapter IV, IDA Paper P-1194, March 1976

Assistance manpower throughout the Navy consistent with the IDA final structure.

F. EXCEPTIONS

Sub-function detail is not provided for depot maintenance support in any of the Security Assistance systems, but such detail can be provided through the implementation of DoD 7220.29 and DODI 4151.15.

Engineering support is not provided by current systems, but may be factored from the total value of case sales for new procurement. The prices charged Security Assistance customers include a pro rata share of non-recurring production costs which provide for improvements of the safety, reliability, delivery schedule or operational effectiveness of the item through special tooling, special test equipment, production engineering, pilot model production, and production test-evaluation.

Research and development support is not currently applicable to Security Assistance because there are no logistic projects being funded with Security Assistance money.